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# blue jay

September, 1977

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# BLUE JAY

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September 1977

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# NUCLEAR OR NOT — OUR CHOICE

STAN ROWE, Dept. of Plant Ecology, University of Saskatchewan, Saskatoon  
S7N 0W0

Should there be uranium development in Saskatchewan? In practical terms this means:

- ) Should Amok and other uranium-mining ventures in the north be given the go-ahead to extract and mill uranium ore?
- ) Should Eldorado Nuclear be allowed to build a uranium refinery at Warman?
- ) Should Saskatchewan "go nuclear" with Sask Power eventually setting up an electricity-generating reactor or two on the shores of Lake Diefenbaker?

These are all related questions. A "yes" or "no" to any one of them leads logically to the likelihood of the same answer to the others. We tend to make decisions by increments, with each incremental decision making more likely a continuation in the direction it sets. Therefore, when faced with important problems we ought to step back and ask where a "yes" or "no" is leading us. In what directions and to what goals will the development of uranium in Saskatchewan take us?

Now, such development will certainly be good financially for some people, perhaps for the province too, in the short run. There's money to be made from rich uranium deposits, measured in millions and billions. A refinery near Saskatoon would "help the economy," providing jobs for more city people and added revenues for various levels of government. But what about long-term benefits? Over this question a heavy mushroom cloud hangs that the boom of quick profits does little to dispel. In fact, the usual cycle for a northern mine is instant prosperity for a few short years

followed by instant poverty for many long years after the ore has run out, with the government picking up the tab. This traditional exploitation of the north and its people by foreign entrepreneurs is no longer acceptable. Suppose that this time we do it in a different way, a way that keeps a good slice of the profits in Saskatchewan and a slice of the slice in the north. Now is it O.K.?

The answer depends on whether the nuclear business is carrying us in the environmental and social directions that seem desirable, for here I point out that we are not discussing any ordinary kind of business. Uranium is not mined, milled and refined to build machinery nor to fabricate tools. It represents highly concentrated energy and power; the heat from fission of one pound of U-235 being the equivalent of that from 300,000 gallons of fuel oil or 14,000 tons of coal. A commitment to uranium development implies the goal of a hard-technology energy-intensive society, living it up electrically surrounded by a surplus of weapons-grade radioactive wastes. Once this path is taken the capital necessary for the development of alternate, softer, more benign energy sources will dry up, for the nuclear industry is exceedingly capital intensive "at the front end." One hundred to one hundred and fifty reactors for Canada by the end of the century (a figure mentioned by most nuclear enthusiasts) will cost about as many billion dollars. Furthermore, once headed in this direction, we will have to opt for a "plutonium economy" as the limited supplies of fissile uranium run out. Once the economy has been organized around nuclear power, it will inevitably follow that plutonium be generated and burned in breeder reactors, weighting the already heavy environmental burden with one of the most hazardous substances invented by man.

EDITOR'S NOTE: Reprinted from the May/June 1977 issue of *Environment Canada*, published by the Saskatoon Environmental Society.



In Knelman's words: Uranium and Thorium are better left permanently at rest in the earth's crust; they already contribute to our global burden of natural background radiation, but we greatly increase this burden when we embark on a nuclear fuel cycle. Thus, nuclear development as a source of energy should be humanity's last resort, as it poses environmental and social hazards which are unacceptable.

## ENVIRONMENTAL HAZARDS

The entire cycle from mining to milling to refining and use in reactors produces a Pandora's box of radiating substances. Unlike fossil fuels that are relatively safe (for they are the products of a life process, photosynthesis), the by-products of nuclear energy are alien to life and exceedingly dangerous. Their ionizing radiation can disorganize cellular tissues, increasing the incidence of genetic defects and of cancer. (It is estimated that 90% of cancer is environmentally induced; we ought not to add carcinogens to air, water and soil.) Intense doses of radiation cause radiation sickness and death. Some of the soluble forms, dispersed in air and water, can be concentrated in plant and animal tissues so that their effects are amplified in the food chain.

Much argument can be heard about standards of safety in mines, mills, refineries and reactor plants but the fact is that no one can say what a "safe" or "permissible" dose of radiation ought to be. A profound secrecy surrounds much of the nuclear goings-on in Canada, where the safety performances and standards of operation of many installations badly need opening up to public scrutiny. Debate also continues as to whether it will be possible to contain adequately the many dangerous, long-lived wastes; the problem may be intractable. Undoubtedly these "hot" residues can be isolated from the environment in steel containers and concrete bunkers for a short time, but what about the next 1,000 or 100,000 years? Alvin Weinberg has suggested the need for a "priestly class" that for

hundreds of generations will devote itself to tending and guarding the radioactive poisons, and this implies a perfectly stable society only possible with perfect people!

In short, the primary environmental objections to "going nuclear" revolve around waste disposal. It is this spectre that recently led the U.K. Royal Commission of Environmental Pollution to the conclusion that: There should be no commitment to a large program of fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long-lived highly radioactive waste for the indefinite future. From this viewpoint, nuclear power may well be dying.

## SOCIAL AND CULTURAL PROBLEMS

At least as serious as the environmental are the social implications of the large nuclear programmes projected for the future. There can be no such thing as a decentralized nuclear energy society because the sizes of the installations and the dependence on electricity will impose a need for centralized control. Vulnerability of the electrical system, plus the availability of nuclear materials from which weapons and bombs can readily be fabricated, will necessitate the kind of security precautions that are appropriate to the garrison state. It will become necessary to keep all potentially dissenting individuals and organizations under police surveillance, while guarding also every phase of the nuclear fuel cycle against sabotage. Here the assumption is that, if people are imperfect, at least there can be a perfect police force. However, Sir Brian Flowers raises some doubts: I do not believe it is a question of whether someone will deliberately acquire plutonium for purposes of terrorism or blackmail, but only when and how often. (Bulletin of Atomic Scientists, December 1976, p.27). The nuclear society, as someone has pointed out, can only succeed if society is perfectly stable. Yet it provides exactly the



means and the opportunities by which that stability can be subverted.

## ALTERNATIVES

The requirements of a democratic society can only be met by a decentralized, non-nuclear, soft (renewable) energy technology. This alternative calls for conservation, by which — according to most authorities — fifty percent of current

energy use could be saved. It calls for stretching out fossil fuel supplies over the next twenty-five to fifty years, while means to capture dilute solar energy are perfected. It calls for a mix of energy options suited to the geographic resources of Canadian terrain, using wind, geothermal and tidal power where appropriate. But most of all it means at this moment setting our directions resolutely away from the nuclear option.



*Amanita muscaria*

Hans Dommasch



# RARE AND ENDANGERED NATIVE PLANT SPECIES IN SASKATCHEWAN SOUTH OF LAT. 55°

JOHN H. HUDSON, Fraser Herbarium, University of Saskatchewan, Saskatoon  
S7N 0W0

My first intention in writing this memorandum was to catalogue the native species whose survival is threatened in the inhabited parts of Saskatchewan. Then other members of the committee that I was working with in Saskatoon suggested the inclusion of rare species known only from a few locations which might be under no present threat of extermination, but could be wiped out easily by "development."

All opinions about rarity of species, their tendency to decrease or otherwise, and the causes thereof, are my own, formed in 25 years of collecting in the southern and central parts of Saskatchewan. Most rare Boreal Forest species have been mentioned only to the extent that they either straggle down into the northern fringes of the inhabited area, or as I have encountered them in my own collecting around Flin Flon. No pretense is made of treating all of the rare boreal species, especially the rare high-northern species, north of about lat. 55°N, as my field experience extends no further north; someone better informed than I will have to write this.

All statements about range apply only to Saskatchewan, unless otherwise stated. Most of our rarities of southeastern Saskatchewan range east to Ontario or even further, by way of southern Manitoba and the American upper mid-west.

Species known only from the Cypress Hills, hence known in Saskatchewan from a limited area, are mentioned with the sole comment "Cypress Hills", even if common there. Unless otherwise stated, all Cypress Hills plants may be expected to have wide ranges further west (and usually disjunctly) in the Cordillera of North America.

No mention has been made of introduced species, some of which, of course, are rare but whose survival is of less interest because they do not represent elements of our native flora.

The statements about range and habitat are mainly my own, but much help has been derived from Breitung Catalogue.<sup>2</sup> Locality citations not in Breitung are largely my own, or have been taken from the shelves of the Fraser Herbarium.

The principal present threats to plant survival are:

- 1) *Agriculture*. When crop prices are depressed farmers must enlarge their cultivated acreage to spread their overhead over a greater area, and when prices are high they are tempted to add marginal agricultural land to their cultivated acreage in the hope of making greater profits.
- 2) *Overgrazing*. This is a sin of the small operator or mixed farmer especially. Actually high farm prices are the best antidote to this.
- 3) *Governmental Action*. In this is included schemes to put dams in wooded valleys with habitat containing rare species (see comment on *Astragalus purshii*), destruction of aspen parkland to make community pastures of cultivated grasses, replacement of prairie by cultivated grasses such as Crested Wheat grass, and drainage schemes. All one can do here is keep the public informed about such schemes; one can at least count on the societies of hunters for help against drainage schemes.
- 4) *Weed Spread*. The introduced perennial species Perennial Sowthistle, Awnless Brome, Couch Grass, Canada Thistle, Dandelion, and (in dry ground) Crested Wheat-grass

have a particularly noxious influence on the remaining stands of native vegetation in that they spread into these stands and take over. This would be because their natural enemies in Europe haven't come over with them to control their numbers. Seeking out these natural enemies and introducing them (after checking that these enemies don't attack anything native) would seem to be biologically and politically possible, at least for Sow Thistle, Canada Thistle, and Dandelion. The pest grasses mostly have close native relatives and also it would evoke political opposition to destroy them even if possible.

) *Picking*. Not a major threat except to Western Red Lily, the Yellow Lady's-Slippers, Venus' Slipper, Crocus Anemone, and possibly to Cliff-brake.

## SPECIES LIST

### PHIOGLOSSACEAE — GRAPE FERN FAMILY

*Ostrychium lunaria*. Moon-fern. Very rare but always was rare or sporadic. Heavy grazing on aspen woods on sandhills endangers this one.

*Ostrychium multifidum*. Leathery-leaved Grape-fern. Moist prairie. Rare.

### OLYPODIACEAE-FERN FAMILY

*Polystichum montana*. Mountain Bladder-fern. Porcupine Mountain only.

*Woodsia glabella*. Cliff-brake. A rock fern growing in cracks of limestone or dolomite cliffs, known from Amisk Lake, Athabasca Lake, Limestone Lake, Roche Percee, Big Muddy Valley. A station could be cleaned out even by botanical collectors if there were many of them.

*Woodsia glabella*. Smooth Woodsia. A rare fern of limestone cliffs known from Amisk and Athabasca Lakes.

*Woodsia oregana*. Oregon Woodsia. Not uncommon in basic rocks in the Precambrian, as at Denare Beach and Athabasca Lake; unlike most other northern rock ferns, occurs southward at a few places, as Cypress Hills and Big Muddy Valley. Very rare southward.

### SELAGINELLACEAE — SELAGINELLA FAMILY

*Selaginella selaginoides*. Prickly Selaginella. A rare species of marl bogs, mostly in the southerly parts of the Boreal Forest.

### PINACEAE — PINE FAMILY

*Pinus contorta latifolia*. Lodgepole Pine. Cypress Hills, the dominant evergreen.

### NAJADACEAE — PONDWEED FAMILY

*Najas flexilis*. Water-nymph. Big Sandy Lake, Pike Lake.

*Potamogeton foliosus*. Leafy Pondweed. Saskatoon, Candle Lake, Caron, Mortlach. There is a large number of pondweeds (*Potamogeton*) for which few reports exist. Difficulties of identification are mainly responsible for the fewness of the reports. Such difficulties are especially severe for the narrow-leaved pondweeds such as this one. There are, too, at least five species of rarely reported pondweeds confined in Saskatchewan to the Boreal Forest region.

### JUNCAGINACEAE — ARROW-GRASS FAMILY

*Scheuchzeria palustris*. Scheuchzeria. Bogs (sphagnum?) P.A. National Park, Candle Lake. This must indeed be scarce, as I have never seen this in the field.

### LILAEACEAE — FLOWERING QUILLWORT FAMILY

*Lilaea scillioides*. Flowering Quillwort. Rare — grows around sloughs and in dry creek beds. Trossachs, Spring Valley, Cypress Hill (Fairwell Creek).

### HYDROCHARITACEAE — WATER — WEED FAMILY

*Elodea canadensis*. Canadian Water-weed. An eastern species found in slow rivers; Souris River at Carnduff; Cumberland House area; Sturgeonweir R. below Amisk Lake.

*Elodea nuttallii*. Western Water-weed. A western species found in intermittent sloughs; Smiley, Glen Bain, Frontier.

### GRAMINAE — GRASS FAMILY

*Alopecurus glaucus*. Western Foxtail. Cypress Hills.

*Andropogon gerardi*. Big Blue-stem. A species of tall-grass prairie in S.E. of province. Now confined there to upper part of valley cutbanks, and easily grazed out.

*Aristida longiseta*. Red Three-Awn. It has been collected at Val Marie, but I have never seen it in Saskatchewan.



*Bouteloua curtipendula*. Side-Oats Grama. Same comments as *Andropogon gerardi*. Does not go as far north-west.

*Calamagrostis rubescens*. Pine Grass. Cypress Hills.

*Elymus cinereus*. Giant Wild Rye. Reported in Breitung's Catalogue from Cypress Hills, Vanguard, and Indian Head.<sup>2</sup> I have never seen this but once, in a moist draw at Old-Man-on-his-Back plateau.

*Elymus glaucus*. Smooth Wild Rye. Cypress Hills.

*Eragrostis hypnoides*. Moss-like Lovegrass. Muddy river bayous, along Souris R. south of Carnduff only.

*Festuca idahoensis*. Bluebunch Fescue. Cypress Hills.

*Glyceria canadensis*. Rattlesnake Grass. One disjunct station at Denare Beach.

*Hordeum brachyantherum*. Meadow Barley. Cypress Hills.

*Milium effusum*. Millet-grass. Porcupine Mountain.

*Munroa squarrosa*. False Buffalo-grass. Saskatchewan Landing (perhaps exterminated by Diefenbaker Lake), Hatton.

*Oryzopsis canadensis*. Canadian Ricegrass. Edges of aspen bluffs, north margin Park Belt, particularly vulnerable to squeeze-out by brome grass.

*Panicum depauperatum*. Starved Panic-grass. Moosomin only. I have not seen this one.

*Panicum subvillosum*. Hairy Panic-grass. Creighton, Amisk Lake, Lake Athabasca; sandy or rocky pine woods in Boreal Forest.

*Panicum virgatum*. Switch Grass. Extreme southeast corner of the province; same comments as *Andropogon gerardi*.

*Panicum wilcoxianum*. Wilcox's Panic-grass. Sand barrens, east half of Park Belt; Welby, Prince Albert, MacDowell, Goodwater.

*Panicum xanthophysum*. Yellow-green Panic-grass. Rock outcrops. Denare Beach, Creighton.

*Phleum alpinum*. Mountain Timothy. Cypress Hills.

*Sitanion hystrix*. Squirrel Tail. Reports scanty; Val Marie, Hatton, Beechy. Not really rare on bare clays and eroded bedrock outcrops in southwest.

*Sporobolus heterolepis*. Prairie Dropseed. Another grass of tall-grass prairie in the southeast. Same comments as for *An-*

*dropogon gerardi*.

*Sporobolus neglectus*. Small Dropseed. Disturbed places, Estevan.

*Stipa richardsonii*. Richardson's Speargrass. Cypress Hills mainly, a very few outlying stations further northeast.

*Trisetum spicatum*. Spike Trisetum. An arctic-alpine species found in the Cypress Hills and reappearing in the N.E. corner of the province (Hasbala Lake).

*Trisetum wolfii*. Wolf's Trisetum. Cypress Hills.

## CYPERACEAE-SEDGE FAMILY

*Carex alopecoidea*. Foxtail Sedge. Woods; McKague, Mortlach, Estevan, Craven, Katepwa, Wood Mountain Park.

*Carex arcta*. Bear Sedge. Amisk Lake, Candle Lake.

*Carex granularis*. Granular Sedge. Spy Hill, Welby, Pipestone Valley, Good Spirit Lake.

*Carex gravida*. Heavy-fruited Sedge. Roche Percee, Oxbow, Willowbunch, Shand.

*Carex hoodii*. Hood's Sedge. Cypress Hills.

*Carex laxiflora*. Loose-flowered Sedge. Porcupine Mountain.

*Carex meadii* and *Carex tetanica*. May be the same species. This was rare on moist prairie in the lower Qu'Appelle valley area in old John Macoun's time. I cannot find it now. Probably it has been exterminated by tillage and by the proliferation of *Bromus inermis* (brome grass) on untilled moist prairie.

*Carex pedunculata*. Long-stalked Sedge. Cumberland House, Hudson Bay Junction, Armit.

*Carex petasata*. Cespitose Sedge. Cypress Hills.

*Carex raynoldsii*. Raynolds' Sedge. Cypress Hills.

*Cladium mariscoides*. Twig Rush. Daulton only. I have never seen this; it must be exceedingly rare. A bog species.

*Cyperus strigosus*. Straw-coloured Cyperus. A report from Watrous exists; I have never seen this one either.

*Rhynchospora alba*. White Beaked-rush. Bare in Boreal Forest bogs; reported by Breitung from Daulton, Prince Albert and Nipawin, but there are no specimens in the Fraser Herbarium from Saskatchewan. I have it from Garthland P.O.

*Rhynchospora capillacea*. Hair-like Beaked-rush. Rare in southern Boreal Forest bogs, often not the same bogs as





Western Red Lily

R. E. Gehlert

*Rh. alba*. Nipawin, Wallwort, Mennon, Garthland, P.O.

*Scirpus atrovirens*. Dark-green Bulrush, Estevan area only.

*Scirpus clintonii*. Clinton's Rush. Rare. Meadow Lake only.

*Scirpus fluviatilis*. River Bulrush. Scarce on marshy shores. Pike Lake (but I haven't seen it), Indian Head, Cumberland House, Keg Camp (Churchill R.).

*Scirpus pumilus*. Dwarf Bulrush. Known from 3 groundwater bogs within 40 miles of Saskatoon. Status OK at present but can be exterminated by drainage.

*Scirpus rufus*. Red Club-rush. As for above, known from 3 or 4 subsaline groundwater bogs in the Saskatoon area.

#### **JUNCACEAE — RUSH FAMILY**

*Juncus ensifolius*. Iris-leaved Rush. Cypress Hills, widespread.

*Juncus nevadensis*. Nevada Rush. Cypress Hills; east block only, so far as known.

*Juncus stygius*. American Bog Rush. Garthland P.O. (Macdowell area); Lake Athabasca.

*Juncus tracyi*. Tracy's Rush. Cypress Hills.

#### **LILIACEAE-LILY FAMILY**

*Allium cernuum*. Nodding Onion. Confined in Sask. in my experience to the Cypress Hills; reports from elsewhere are almost certainly in error.

*Allium stellatum*. Pink-flowered Onion. Park Belt. Much reduced by grazing and tillage.

*Lilium philadelphicum* var. *andinum*. Western Red Lily. O.K. in Palaeozoic and Precambrian areas of province. Very much reduced in settled area, mostly by overgrazing of the moist calcareo-saline groundwater areas in which it grows best. Picking has had some adverse effect too, near cities, especially since, although perennial, it flowers only once before dying. Its scattered occurrences in aspen woodland have been much reduced by grazing and by influx of drift soil into bluffs which provides an entry for *Bromus inermis*. Lacking in southwest, but never did occur in Cypress Hills or west of Valjean on the main line.

*Polygonatum canaliculatum*. Common Solomon's-Seal. Rare, Estevan area.



*Smilacina racemosa*. Clasping-leaved Solomon's-Seal. Cypress Hills.

*Streptopus amplexifolius*. Clasping-leaved Twisted-Stalk. Rare in rich moist aspen woods, Boreal Forest-Aspen Parkland intergrade. Cypress Hills, Meadow Lake, Pasquia Hills, Porcupine Mountain.

*Trillium cernuum*. Nodding Trillium. Found rarely in moist woods in east-central Saskatchewan. Occurrences at Runnymede and Veregin and somewhat affected by grazing. Hudson Bay Junction area more or less OK.

## AMARYLLIDACEAE—AMARYLLIS FAMILY

*Hypoxis hirsuta*. Hairy Star Grass. In grassy meadows subject to some groundwater influence, Yorkton area. Probably reduced by the infiltration of such meadows by *Sonchus arvensis* and *Cirsium arvense*. Rare and at edge of range to begin with.

## ORCHIDACEAE—ORCHID FAMILY

*Calypso bulbosa*. Venus' Slipper. Rare in pine woods, Cypress Hills, Precambrian of Amisk Lake, and a few scattered stations along the southern edge of the Boreal Forest. A slow reproducer and easily picked out.

*Corallorhiza striata*. Striped Coral-root. Reported from several locations in the east half of the Park Belt, but I have not seen it outside the Cypress Hills.

*Cypripedium arietinum*. Ram's Head Lady's-Slipper. Very rare. Prince Albert, Hudson Bay Junction.

*Cypripedium calceolus* var *parviflorum*. Small Yellow Lady's Slipper. Growing in wooded bogs and groundwater seeps in the Park Belt, the populations of this Lady's Slipper are not too severely reduced because they are hard to find.

*Cypripedium calceolus* var *pubescens*. Large Yellow Lady's Slipper. This large-flowered form grew on moist prairie in the Park Belt in the eastern half of Saskatchewan. Very much reduced, due mainly to tillage. The plants are rhizomatic, so picking is not quite such a menace as for bunched or bulb-bearing species.

*Cypripedium passerinum*. Sparrow's-egg Lady's Slipper (often, White Lady's Slipper). Rare along springs in coniferous woods.

*Goodyera oblongifolia*. Menzies' Rattlesnake Plantain, Cypress Hills.

*Habenaria dilatata*. White Bog Orchid. OK



Large Round-leaved Orchid Bob Godwin

as yet in calcareous groundwater-fed bogs in Park Belt, but fate bound up with that of the bogs. Uncommon.

*Habenaria orbiculata*. Large Round-leaved Orchid. Rare in southern part of Boreal Forest area.

*Habenaria viridis* var *bracteata*. Long-bracted Orchid. Rare around edges of thickets, wetter parts of Park Belt. Almost always occurs by ones or twos, not by colonies.

*Liparis loeselii*. Bog Tway-blade. Confined to a few very wet groundwater-fed bogs in east half of Park Belt. Very rare now but always was so. Fate bound up with that of the bogs.

*Listera borealis*. Northern Tway-blade. Very rare in spruce forests at springy places.

*Listera cordata*. Heart-leaved Tway-blade. In cool spruce woods, reported infrequently, but more because it's hard to see rather than because of great rarity.

*Malaxis monophyllos* var *brachypoda*. Adder's Mouth. In coniferous woods; rare and hard to see. MacDowall, Waskesiu.

*Malaxis paludosa*. Swamp Adder's Mouth. Even rarer and harder to see than the preceding; known only from Garthland P.O. area.

*Spiranthes gracilis*. Slender Ladies'-Tresses. Rare in sandy pine woods, west half of





Large Yellow Lady's Slipper Bob Godwin

Boreal Forest area, as far south as Meadow Lake.

#### **SALICACEAE-WILLOW FAMILY**

*Populus angustifolia*. Willow-leaved Cottonwood. Known in Saskatchewan in relatively pure state only from middle part of Fairwell Creek valley north of Ravenscrag. Watch for dam-building schemes.

#### **FAGACEAE-BEECH FAMILY**

*Quercus macrocarpa*. Bur Oak. Abundant, lower Qu'Appelle and Pipestone valleys; rare, Assiniboine and lower Souris valleys.

#### **URTICACEAE-NETTLE FAMILY**

*Urtica canadensis*. Wood Nettle. Rare in heavy woods, lower part of Souris (and Antler?) river valleys.

#### **POLYGONACEAE-BUCKWHEAT FAMILY**

*Polygonum confertiflorum*. Dense-flowered Knotweed. An inconspicuous little knotweed known in Sask. only from two Cypress Hills collections.

#### **CHENOPODIACEAE-PIGWEED FAMILY**

*Chenopodium dacoticum*. Stinking Goosefoot. Known from a few collections in arid wash slopes in river valleys — south of Kyle in the valley of the South Saskatchewan, and west of Ravenscrag in

the Frenchman R. valley. Probably exterminated at the former location by Diefenbaker Lake.

*Cycloloma atriplicifolium*. Winged Pigweed. One old report from Baildon; the specimen involved cannot be located, and no later collections have been made. It is an open question whether the species is extinct in Saskatchewan or whether it never occurred and the report is in error.

*Eurotia lanata*. Winter Fat. A species of dry prairie and eroded slopes in the prairie region differentially reduced by overgrazing because it is palatable and nutritious to stock.

*Suaeda intermedia*. Shrubby Blite. Known in Sask. only from a couple of outcrops of redeposited Ravenscrag Formation on buttes above the Frenchman River 35 miles southeast of Val Marie.

#### **NYCTAGINACEAE-FOUR O'CLOCK FAMILY**

*Mirabilis linearis*. Linear-leaved Umbrellawort. Dry hot slopes. Big Muddy Valley, Frenchman R. valley at Knollys. May just be a form of *Mirabilis hirsuta*, Hairy Umbrellawort, which is common enough.

#### **PORTULACACEAE-PURSLANE FAMILY**

*Claytonia lanceolata*. Lance-leaved Spring Beauty. Cypress Hills.

*Claytonia linearis*. Linear-leaved Spring Beauty. Rare, Cypress Hills.

#### **CARYOPHYLLACEAE-PINK FAMILY**

*Arenaria congesta* var *lithophila*. Rocky-ground Sandwort. Cypress Hills and the High Plains southward thereof.

*Arenaria rubella*. Boreal Sandwort. Cypress Hills, Lake Athabasca.

#### **NYMPHAEACEAE-WATER LILY FAMILY**

*Nymphaea tetragona leibergii*. Small White Water Lily. Rare, Cumberland House area only.

#### **RANUNCULACEAE — BUTTERCUP FAMILY**

*Anemone quinquefolia*. Wood Anemone. Rare, aspen woods; Somme, Hudson Bay Junction, Armit.

*Aquilegia canadensis*. Red Columbine. Assiniboine R. and lower Qu'Appelle R. drainage areas only; subject to picking.

*Clematis verticellaris* var *columbiana*. Western Purple Clematis. Cypress Hills.

*Delphinium glaucum*. Tall Larkspur. Rare, woods in west-central Saskatchewan, such



as the Meadow Lake and Loon Lake areas; I have never seen this.

*Ranunculus inamoenus*. Cypress Hills.

*Thalictrum occidentale*. Western Meadow Rue. Cypress Hills.

### CRUCIFERAE-MUSTARD FAMILY

*Halimolobos virgata*. Only few reports: Cypress Hills, Wood Mountain, Birsay. Seems rare but may just be overlooked because of its extreme resemblance to several species of Rock Cross (*Arabis*). I myself never did recognize it until I memorized the drawing in Flora Pac. N.W., and now I'm fairly sure that I have seen it in the past.<sup>3</sup>

*Hutchinsia procumbens*. Very seldom collected — Parkbeg, Ingebright Lakes, Indi Lake. A tiny mustard found in earliest spring on the beaches of sodium sulfate lakes.

### DROSERACEAE-SUNDEW FAMILY

*Drosera anglica*. Oblong-leaved Sundew. Very rare, sopping wet bogs in southern part of Boreal Forest; Prince Albert, McKague, Garthland P.O.

*Drosera linearis*. Slender-leaved Sundew. Same comments as preceding.

### SARRACENIACEAE-PITCHER PLANT FAMILY

*Sarracenia purpurea*. Pitcher Plant. Requires large calcareous bogs; very showy in flower; shallowly rooted and subject to picking. Not rare as yet.

### CRASSULACEAE-STONECROP FAMILY

*Sedum lanceolatum*. Stonecrop. Cypress Hills.

### SAXIFRAGACEAE-SAXIFRAGE FAMILY

*Lithophragma bulbifera*. Star Flower. Grows along draws on the lower south slopes of the Cypress Hills. Vulnerable to grazing.

*Parnassia glauca*. American Grass of Parnassus. Marl bogs and groundwater seeps in a limited area of east-central Saskatchewan from Yorkton north to Nipawin. Same comments as for *Hypoxis hirsuta*.

*Saxifraga rhomboidea*. Rhomboid-leaved Saxifrage. Cypress Hills.

### ROSACEAE-ROSE FAMILY

*Potentilla diversifolia*. Varying-leaved Cinquefoil. Cypress Hills.

*Prunus americana*. Wild Plum. A large

shrub or small tree. Souris R. valley from Estevan downstream. Deforestation measures or dam-building schemes could clean this one out. Not presently critical.

*Prunus pumila*. Sand Cherry. Rare on open sand plains in east-central Sask.; Welby Hudson Bay Junction. Vulnerable to community pasture "improvement" schemes.

*Sorbus americana* (incl. *S. scopulina* of the Cypress Hills) Mountain Ash, Rowan. A small tree or large shrub widely but discontinuously distributed in Boreal Forest areas of high moisture efficiency but good drainage; Cypress Hills, Porcupine Mountain, Amisk Lake, Little Bear Lake on Hanson Lake Road, Lake Athabasca.

*Spiraea lucida*. Shining-leaved Meadow sweet. Cypress Hills.

### LEGUMINOSAE — PEA FAMILY

*Astragalus crassicaupus*. Ground Plum. Moist prairie. Palatable to grazing. Much reduced by tillage and overgrazing.

*Astragalus kentrophyta*. Prickly Milk Vetch. Confined in Saskatchewan to a few gravel barrens in the Great Sand Hills area Webb, Bitter Lake.

*Astragalus purshii*. Pursh's Milk Vetch. Known from very dry prairie, South Saskatchewan River valley south of Kyle and south of Old-Man-on-his-Back plateau. Former locality has likely been extinguished by the South Saskatchewan dam.

*Astragalus racemosus*. Racemose Milk Vetch. A large selenium-collecting milk vetch found in Canada only on Bearpaw shale outcrops in south-central Saskatchewan; Moose Jaw, Buffalo Pound Lake, Dirt Hills, Blackfoot Ridge badland at Truax.

*Astragalus vexilliflexus*. Few-flowered Milk Vetch. Cypress Hills and the Driftless area in the Rockglen district.

*Lupinus pusillus*. Small Lupine. Rare species of loose sand, southwest Saskatchewan. Needs disturbance for survival. Can be extinguished if blowouts are permitted to revegetate with grass.

*Oxytropis besseyi*. Bessey's Locoweed. Known in Canada only from silt buttes of the Ravenscrag formation in the driftless areas at Rockglen-Killdeer and the lower Frenchman river valley. No present threat.

*Oxytropis lambertii*. Lambert's Loco-weed. A loco-weed with long spikes of showy magenta flowers found only in the extreme south-east; Estevan, Goodwater.

*Petalostemon villosus*. Hairy Prairie



Clover. Known in Saskatchewan only from the Caron-Mortlach area on loose sand in blowouts; threatened by natural regrassing of blowouts there.

#### **GERANIACEAE — GERANIUM FAMILY**

*Geranium richardsonii*. White Wild Geranium. Cypress Hills.

*Geranium viscosissimum*. Sticky Purple Geranium. Common, Wood Mountain plateau; West Block only, Cypress Hills. There are reports and specimens from the Touchwood Hills area, which must be an isolated pocket of the range.

#### **POLYGALACEAE — MILKWORT FAMILY**

*Polygala alba*. White Milkwort. Found in Canada only on dry eroded slopes in the Estevan, Souris River, and Big Muddy Valley areas; abundant enough there.

*Polygala paucifolia*. Pink Fringed Milkwort. Discontinuously distributed in the southern part of the Boreal Forest, favouring high-lime areas. I have seen it at MacDowall, Hudson Bay Junction, and Amisk Lake, and there are reports or specimens to hand from McKague, Shellbrook, and Candle Lake.

*Polygala senega*. Seneca Snakeroot. Probably reduced as much by the collection of seneca roots for medicine as by agriculture. Even now not hard to find if one knows where to look for it.

*Polygala verticillata*. Whorled Milkwort. One location on valley bottom of a side coulee of Souris R., 4 miles west of Estevan. Annual and seems to behave like a desert ephemeral in that the population is not always visible every year.

#### **ANACARDIACEAE — SUMAC FAMILY**

*Rhus glabra*. Smooth Sumac. One colony known, on shore of Little Birch Lake near Flin Flon.

#### **ELASTRACEAE — TAFF TREE FAMILY**

*Elaeagnus scandens*. Climbing Bittersweet. Known from one tract of brush on river bluffs of Souris valley south of Estevan. This is right at the edge of the range, so it could easily be wiped out by climatic changes even without human interference.

#### **UTTERLIERAE — ST. JOHN'S WORT FAMILY**

*Hypericum virginianum* var *fraseri*. Virginia St. John's-wort. Sedge swamps; Amisk Lake, Saskatchewan River delta.

#### **VIOLACEAE — VIOLET FAMILY**

*Viola pedatifida*. Crowfoot Violet. Moist prairie in prairie and parkland regions. Much reduced by tillage and overgrazing; now hard to find.

*Viola pubescens* var *leiocarpa*. Yellow Wood Violet. Wet woods, Armit.

*Viola selkirkii*. Selkirk's Blue Violet. Rare, wet woods, east end of Boreal Forest; Amisk Lake, Porcupine Mountain, Saskatchewan River delta. The seldom collected *V. palustris* of wet alder woods and *V. renifolia* of upland white spruce forest (both in the Boreal Forest zone) are not really rare, just inconspicuous; *V. renifolia* furthermore blooms very early.

#### **ONAGRACEAE — EVENING PRIMROSE FAMILY**

*Oenothera breviflora*. Taraxia. Rare, S.W. Saskatchewan, around alkali lakes and on dry slough bottoms.

#### **HALORAGIDACEAE — WATER MILFOIL FAMILY**

*Myriophyllum pinnatum*. Pinnate Water-Milfoil. Shallow water on southern prairies; Wordsworth.

#### **UMBELLIFERAE — CARROT FAMILY**

*Lomatium dissectum*. Mountain Wild Parsnip. West Block Cypress Hills only. Must be very rare; I have never seen it.

*Lomatium cous* (*L. montanum*). Cous. Confined in Canada, so far as is known, to late-snow areas just below plateau level in West Block Cypress Hills of Saskatchewan.

*Lomatium orientale*. White-flowered Parsley or Cous. Rare along Souris River valley from Estevan downstream on dry benches. No present threat but could be wiped out by "development."

*Perideridia gairdneri*. Yamp, Squaw-root. Cypress Hills.

*Zizia aurea*. Golden Alexanders. One report for Saskatchewan, at Strongfield, but the specimen is an aberrant *Z. aptera* (Meadow Parsnip).

#### **PYROLACEAE — WINTERGREEN FAMILY**

*Monotropa hypopithys*. Pine-sap. A rare saprophyte of the Cypress Hills.

*Pterospora andromedea*. Pine-drops; Giant Bird's Nest. Rare in lodgepole pine woods in Cypress Hills; could be easily cleaned out by picking, as it is very spectacular, almost weird-looking, and occurs singly.

*Pyrola minor*. Lesser Wintergreen. Rare, Cypress Hills and Precambrian part of



Boreal Forest.

### **PRIMULACEAE — PRIMROSE FAMILY**

*Dodecatheon conjugens*. Cylindric-Flowered Shooting Star. Cypress Hills.

*Dodecatheon pulchellum*. Shooting Star. Meadows in calcareous zone of groundwater outcrops. Can be reduced by overgrazing or by sowthistle spread into these areas. Showy.

*Primula incana*. Mealy Primrose. Same comments as for Shooting Star.

*Primula mistassinica*. Dwarf Canadian Primrose. A few reports from Boreal Forest areas; I cannot say whether or not is rare.

### **GENTIANACEAE — GENTIAN FAMILY**

*Gentiana affinis*. Oblong-leaved Gentian. Same comments as for Shooting Star.

*Gentiana andrewsii*. Bottle Gentian. Moist prairie, lower Qu'Appelle Valley area. At the edge of its range, subject to wiping out by tillage and sowthistle spread. I have not seen it despite looking. Probably extinct.

### **ASCEPIADACEAE — MILKWEED FAMILY**

*Asclepias verticillata*. Whorled Milkweed. A few locations on dry flats in Souris River valley west of Estevan.

### **POLEMONIACEAE — PHLOX FAMILY**

*Linanthus septentrionalis*. Northern Linanthus. An inconspicuous early-spring annual of grassy slopes confined in Saskatchewan to the high plains south of the Cypress Hills and to Pinto Butte.

*Phlox albyssifolia*. Blue Phlox. Wood Mountain — Big Muddy Valley area only.

### **BORAGINACEAE — BLUE BUR FAMILY**

*Lithospermum ruderales*. Woolly Gromwell. West Block Cypress Hills only.

*Onosmodium molle* var *occidentale*. Western False Gromwell. Around edges of brush and groves, Souris River valley below Estevan. Threatened by brome-grass aggression.

### **VERBENACEAE — VERVAIN FAMILY**

*Verbena hastata*. Blue Vervain. Rare on moist banks and shores, southeast corner — Roche Percee; there is an outlying collection from Wadena.

*Verbena urticifolia*. Nettle-leaved Vervain. One location on the banks of the Antler River south of Gainsborough; visibly threatened by the spread of sowthistle.

### **LABIATAE — MINT FAMILY**

*Scutellaria lateriflora*. Blue Skull-cap. Distribution southeastern; Trossachs, Souris River valley, Armit.

### **SOLANACEAE — POTATO FAMILY**

*Physalis grandiflora*. Large White-flowered Ground-Cherry. Very rare; grows by ones and twos on disturbed bare sand in Boreal Forest areas. Civilized man has introduced many weedy annuals quick to take over such disturbed sands.

### **SCROPHULARIACEAE — SNAPDRAGON FAMILY**

*Besseyia wyomingensis*. Kitten-tails. West Block Cypress Hills.

*Castilleja coccinea*. Scarlet Paint-brush. Reported from a damp meadow near Buchanan about 1920; not collected since. I have never seen it. Probably extinct in Saskatchewan, but was here at the northwest edge of the range anyway. Same comments as Bottle Gentian.

*Mimulus glabratus*. Small Yellow Monkey-flower. A few reports from shady boggy springs in the Qu'Appelle and Pipestone valleys. It must be very rare; I've never seen it.

*Mimulus guttatus*. Yellow Monkey-flower. Cypress Hills, abundant and widespread.

*Mimulus ringens*. Blue Monkey-flower. Reported by Breitung from the banks of the Red Deer River at Hudson Bay Junction.<sup>2</sup> I could not find it there, but the river was in high water then. An eastern species.

*Rhinanthus crista-gallii*. Yellow Rattle. Cypress Hills mainly (I have not seen it elsewhere); Ile a la Crosse; I question the locality data on the Carnduff sheet in the Fraser Herbarium.

*Veronica serpyllifolia* var *humifusa*. Northern Thyme-leaved Speedwell. Cypress Hills.

### **LENTIBULARIACEAE — BLADDERWORT FAMILY**

*Pinguicula vulgaris*. Butterwort. Known from a few calcareous bogs in the Park Belt — Prince Albert, Mennon, Strawberry Lakes, Candle Lake. Its future is bound up with the future of these bogs.

### **OROBANCHACEAE — BROOMRAPE FAMILY**

*Orobanche uniflora*. One-flowered Cancer Root. One Cypress Hills record.

### **CAPRIFOLIACEAE — HONEYSUCKLE FAMILY**





Large White-flowered Ground-Cherry

Wayne Harris

*Sambucus pubens*. Red-berried Elder. Lower Saskatchewan river near Cumberland House; Armit. A large shrub of wet woods, plainly confined to the first prairie level or Lake Agassiz bottom in Saskatchewan.

*Viburnum lentago*. Nanny-berry. A shrub in extreme S.E. corner of the province. Very rare — I have not seen it. Same comments as *Prunus americana*.

#### ADOXACEAE — MOSCHATEL FAMILY

*Adoxa moschatellina*. Moschatel. Under Ostrich Fern clumps in wet spots along river banks in Boreal Forest; records scanty, but plant very hard to spot. Height of 17 miles south of Meadow Lake; Canale Lake; Pasquia Hills (Boivin).<sup>1</sup>

#### ORANTHACEAE — MISTLETOE FAMILY

*Arceuthobium pusillum*. Spruce Mistletoe. Hudson Bay Junction only. By the descriptions given, this would appear to be very much more difficult to spot than the widespread Pine Mistletoe, *A. americanum*.

#### LOBELIACEAE — LOBELIA FAMILY

*Downingia laeta*. Downingia. A small mud annual with pink flowers collected in the 1890's by John Macoun at Crane Lake and Skull Creek, and still present along Skull Creek in the late 1950's. I have never seen it elsewhere.

#### COMPOSITAE — COMPOSITE FAMILY; TUBULIFLORAE — THISTLE SUB-FAMILY

*Anaphalis margaritacea*. Pearly Everlasting. Cypress Hills; Cutknife.

*Antennaria dimorpha*. Stemless Everlasting. A rare species of very dry prairie south of the Cypress Hills. Divide, Climax.

*Antennaria anaphaloides*. Anaphalis-like Pussy-toes. Cypress Hills.

*Antennaria corymbosa*. Corymbose Pussy-toes. Cypress Hills. A doubtful segregate out of the *A. rosea* - *A. microphylla* (small-leaved Pussy-toes) complex.

*Antennaria umbrinella*. Brown-bracted Pussy-toes. Cypress Hills.



*Arnica cordifolia*. Heart-leaved Arnica. Cypress Hills, with a few outlying localities elsewhere — Waskesiu Lake, Pasquia Hills (Boivin, part III).

*Arnica fulgens*. Shining Arnica. Moist prairie, grassland zone. Much reduced by cultivation, overgrazing, and drifting of blow dirt onto road allowances.

*Aster eatonii*. Eaton's Aster. Cypress Hills.

*Aster umbellatus* var *pubens*. Flat-topped Aster. Spy Hill area only, growing among brush. Seemed OK for the time being when I collected it.

*Bahia oppositifolia*. Bahia. Rare in very arid places, extreme south; probably native. Field weed at Pambrun; in alkaline valleys at Divide (on the south side of the Old-Man-on-his-Back); and I have seen it in the Big Muddy.

*Bidens beckii*. Water Marigold. Quiet waters, Cumberland House area.

*Boltonia asteroides*. Aster-like Boltonia. Wet clayey disturbed places, such as tilled sloughs and road ditches, south-central Saskatchewan, mostly on the Regina Plain; Torquay, Weyburn, Milestone, Baildon. Abundant but seldom reported because of its extreme likeness to *Aster hesperius*, Western Aster, of similar habitats.

*Cirsium drummondii*. Stemless Thistle. Moist prairie at edges of brush in Park Belt. Much reduced by cultivation and spread of brome grass. The only locations where I have seen it are MacDowall Forest Reserve and the Runnymede-Togo area.

*Cirsium muticum*. Swamp Thistle. Rare in swamps and alder thickets, east half of the intergrade between Park Belt and Boreal Forest. There are several citations in Breitung but the only place that I have seen it is Armit.<sup>2</sup> It is subject to aggression by sowthistle.

*Echinacea angustifolia*. Purple Coneflower. Another Souris River specialty; grows on dry slopes along the Souris River at least as high up as Goodwater. I have seen it on slopes near Big Beaver.

*Erigeron radicans*. Dwarf Fleabane. Dry eroded slopes and badlands, Wood Mountain area and Cypress Hills. Reports from elsewhere appear improbable to me. I have not seen this except in the Wood Mountain area.

*Helianthus tuberosus* var *subcanescens*. Jerusalem Artichoke. Estevan area only. Grows among brush along with Western Snowberry. In no present danger.

*Heliopsis helianthoides* var *scabra*. Sunflower Heliopsis. Said to grow around

edges of bluffs in north-east part of Park Belt, an area much subject to invasion of lands not cultivated by brome grass and sow thistle. I have never seen it, much less collected it, so I presume it's much reduced.

*Hymenoxys acaulis*. Stemless Rubberweed. There are scattered reports or collections from various parts of S.W. Saskatchewan, but I know this only from one coulee south of Mortlach. Breitung gives it a Cypress Hills range, but I've never seen it there. Probably this always was sporadic at least, but now is much reduced.

*Senecio integerrimus*. Entire-leaved Ragwort. Same comments as Shining Arnica.

### COMPOSITAE: LIGULIFLORAE — CHICORY SUB FAMILY

*Crepis occidentalis* - *Crepis intermedia* complex. Western Hawksbeard. Cypress Hills: outlying station at Matador.

*Hieracium albiflorum* Hook. White-flowered Hawksbeard. Cypress Hills.

*Lactuca biennis*. Tall White Lettuce. OK in southern half of Boreal Forest area; much reduced in Park Belt a little to the south, mostly due to sowthistle spread.

*Lactuca ludoviciana*, Western Lettuce, has been reported by Breitung and Boivin from Regina and Gainsborough.<sup>2 1</sup> We have no specimens in the Fraser Herbarium, and I have never observed it.

*Lygodesmia rostrata*. Annual Skeleton Weed. An annual of bare sands in S.W. Saskatchewan, subject to extermination if blowouts are permitted to revegetate. It is in the same position as Small Lupine.

*Microseris cuspidata*. Cuspidate Small Lettuce. A few records from coulee slopes and grassy hillsides in south-central Saskatchewan — Le Bret, Lumsden, Mortlach, Big Muddy Valley. Very early flowering and whole plant quickly shrivelling — hence the fewness of the collections.

*Prenanthes alba*. White Lettuce. Rare in rich aspen woods, east half of Park Belt. Not resistant to grazing, trampling or invasion by brome grass or sowthistle. Probably reduced.

*Prenanthes racemosa*. Glauous White Lettuce. Somewhat drier aspen woods in entire Park Belt as far south as Saskatoon. Invasion of aspen bluffs by brome grass has been particularly damaging to this species.

*Stephanomeria runcinata*. Rush Pink. Con-



fined to outcrops of the non-bentonitic powder-shale members of the Bearpaw formation in S.W. Saskatchewan. I have seen or collected it at Beechy, the Morgan Creek badlands, Horse Creek, and the Frenchman River canyon 35 miles southeast of Val Marie.

<sup>1</sup>BOIVIN, B. 1967. Flora of the Prairie Provinces, a handbook to the flora of the provinces of Manitoba, Saskatchewan, Alberta, Parts I, II, III. Pro-

vancheria 2, Memoires de l'Herbier Louis Marie, Faculte d'Agriculture, Universite Laval, and Department of Agriculture, Ottawa.

<sup>2</sup>BREITUNG, A. J. 1957. Annotated catalogue of the vascular flora of Saskatchewan. American Midland Naturalist 58: 1-72.

<sup>3</sup>HITCHCOCK, C. L. and A. CRONQUIST. 1964. Vascular plants of the Pacific Northwest, Part II. Univ. of Washington Press. 508-510.



Common Reed Grass

J. B. Gollop



# FURTHER RECORDS OF THE RARE DRAGON'S MOUTH (SWAMP-PINK) ORCHID, IN SASKATCHEWAN

VERNON L. HARMS, Fraser Herbarium, University of Saskatchewan, Saskatoon S7N 0W0 CAROLYN A. KINDRACHUK and BOB C. GODWIN

One of the handsomest but rarest of our native orchid species in Saskatchewan is *Arethusa bulbosa* L., which is known by various common names including Swamp-pink, Dragon's-mouth, Bog-rose, and *Arethusa*. It is an eastern North American species, apparently reaching its western-most range limit here. This orchid was first reported for Saskatchewan by Argus<sup>1</sup> from a black spruce *Sphagnum* bog at "Little Gull Lake" east of the William River along the south shore of Lake Athabasca (G. A. Argus #327-62, 497-63). This first Saskatchewan report extended the species' then known range nearly 500 miles northwestward of its recorded occurrence at The Pas, Manitoba. Subsequently it was reported again for Saskatchewan by Erskine<sup>3</sup> from a "muskeg off the Dore Lake Road", south of Dore Lake, nearly 300 miles south of Argus' Lake Athabasca site.

Recently we have found this apparently rare orchid at the following four additional localities in boreal Saskatchewan: (1) Near Nikik Lake, south of Montreal Lake, about 54°N, 105°50'W; in bog habitat with pitcher plants; June 28, 1976; collected by Dorothy G. Bird, the specimen referred to C. A. Kindrachuk for identification. (2) 10 km north-northeast of Nipawin; about 1 km south of South Saskatchewan River, 53°27' N, 103°56'W; open bog with some tamarack, near treed bog portion; June 13, 1976; Bob C. Godwin. (3) Cluff Lake area, about 2½ km north-northeast of Island Lake, 58°23½'N, 109°42'W; in black spruce/tamarack sparsely treed bog; June 16, 1977; V. L. Harms #23985. (4) 1½-3 km south of South Arm of Lac Ile-A-La-Crosse, about 13½ km northwest of Beauval, near Miles 68-69 of Highway 155,

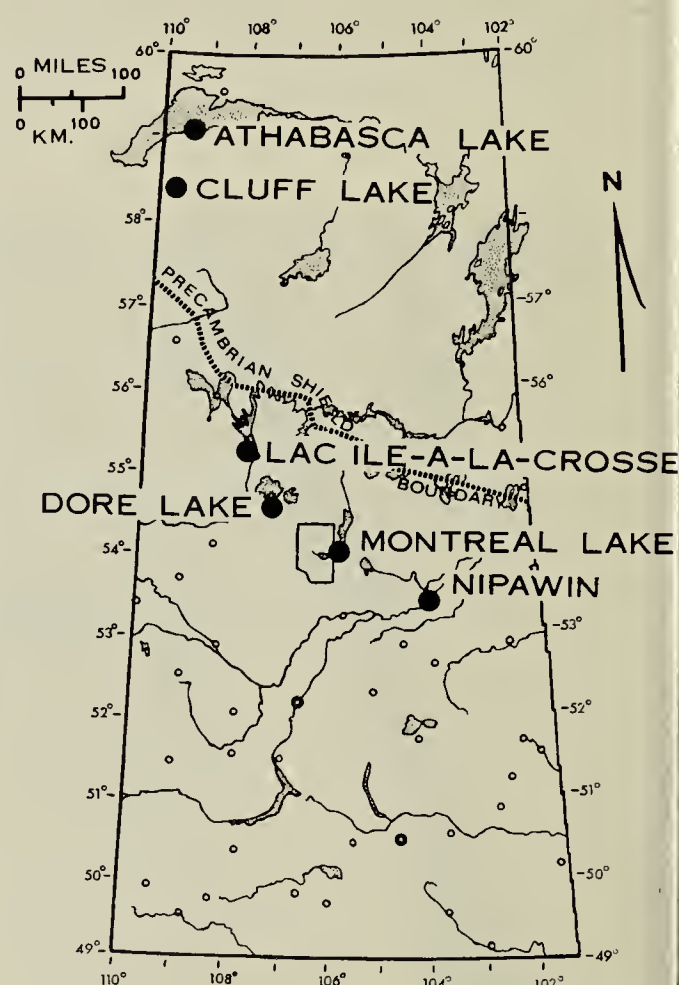


Fig. 1 Known Distribution of the Dragon's-mouth Orchid, *Arethusa bulbosa*, in Saskatchewan.

55°10'N, 107°66½'W; black spruce sparsely treed bog; June 23, 1977; V. L. Harms #23993. In each of the above localities, the *Arethusa* plants were at least several in number to sometimes locally numerous. Limited voucher specimens for each of the above localities are deposited in the Fraser Herbarium, University of Saskatchewan, Saskatoon, to document these records.

As shown in the distribution map of Fig. 1, the six presently known Saskatchewan localities for *Arethusa bulbosa* are quite widely spaced, suggesting the possible sporadic occurrence of this rare orchid species



SEPALS & LATERAL PETALS

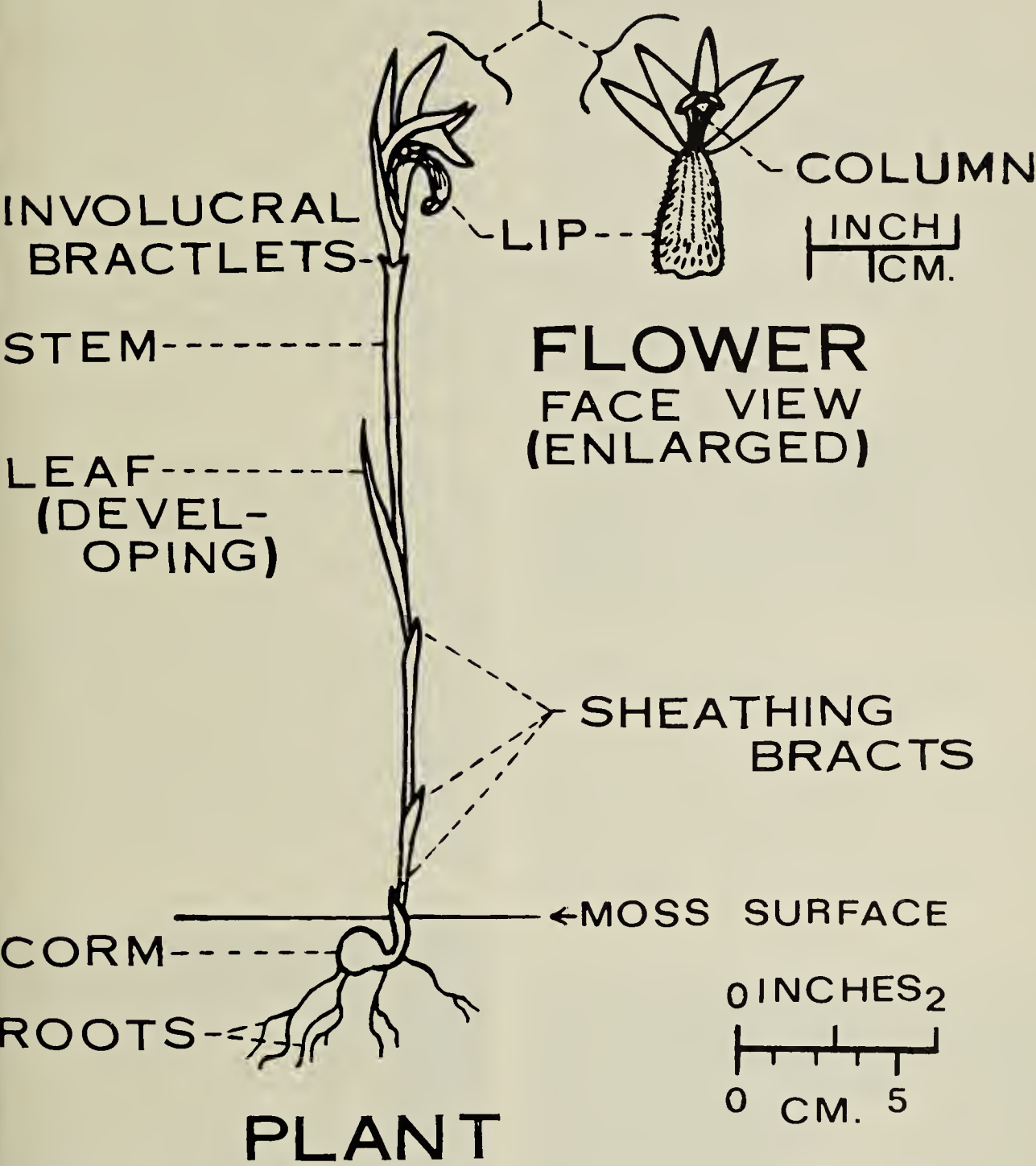


Fig. 2 Dragon's-mouth Orchid, *Arethusa bulbosa*.

sewhere in suitable bog habitats perhaps throughout boreal Saskatchewan where it should be looked for during early summer (particularly in June). These newer records narrow the former great gap existing between the Manitoba reports and the very disjunct-appearing Lake Athabasca site. It may or may not be phytogeographically significant that, except for the much more northern Cluff Lake and Lake Athabasca localities which occur on the Precambrian Athabasca Sandstone Formation, all of the other

known Saskatchewan records for *Arethusa bulbosa* are from the more southern portion of the Boreal Forest Zone south of the Canadian Precambrian Shield boundary. It is also interesting that at least the presently known Manitoba and Saskatchewan records for the dragon's-mouth orchid, when taken together, tend more or less to form a diagonal line from southeastern Manitoba to northwestern Saskatchewan.

The showy, magenta to rose-colored flowers of the dragon's-





C. A. Kindrachuk

Fig. 3 Side View of Flower of Dragon's-mouth Orchid, *Arethusa bulbosa*.

mouth orchid are 2.5-5.0 cm long and solitary on slender, smooth, apparently leafless flowering stems about 10-25 cm high, arising from ovoid bulb-like corms, which are usually rather loosely rooted in the *Sphagnum* moss (Figs. 2, 3 & 4). A single, narrow, grass-like leaf, about as long as the flowering stem, and folded to less than 5 mm in width, develops only after flowering. The three sepals and two lateral petals of the flowers are somewhat basally fused, all similar, magenta-colored, arched-erect, narrow, to about 8 mm wide, and 2-5 cm long. As in all orchids, the lower of the three petals is specialized as a "lip", which here is oblong-shaped, 20-35 mm long, widened upward to 10-17 mm at the notched to shallowly 3-lobed summit, basally erect and then curved outward with terminal portion abruptly bent downward, rose-purplish, mostly with pinkish-white spots or striations, strongly veined, marginally minutely fringed, and with 3 to 5 somewhat yellowish to dark purple bearded crests. The central column (fused style and stamen filament) erect, basally fused to the lip, flattened, petal-like, widened and toothed

at summit, with the protruding stigma down-turned. The mature fruits are dry, many-seeded capsules, 2-3 cm long, long-beaked, and capped by dried, papery, persistent perianth parts. Probably Correll<sup>2</sup> gives us the most vivid, although fanciful description of this rare dragon's-mouth orchid by imparting to it the appearance of a "little beast, with ears distended, and lolling tongue, straining to recognize the intruder of its peaceful haunts", an apt description earlier quoted in the first report of this species for Saskatchewan by Argus.

The bog flora throughout northern Saskatchewan needs more investigation. Professional botanists and amateur naturalists, alike will find the discomfort from insects and difficulties of movement in bogs more than compensated for by a discovery of interesting and sometimes rare bog wildflowers, such as various orchids, butterworts, louseworts, sundews, cranberries, false asphodels, pitcher plants, three-leaved Solomon's seal, bog rosemary, bog laurel, buckbeard, etc.



B. C. Godwin

Fig. 4 Face View of Flower of Dragon's-mouth Orchid, *Arethusa bulbosa*



MARGUS, GEORGE W. 1962. *Arethusa bulbosa*, an addition to the flora of Saskatchewan. Blue Jay 20(4): 162-163.

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## FIRST SASKATCHEWAN RECORD OF SHOWY LADY'S SLIPPER

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A telephone call from an active junior naturalist, Eric Lang of Regina, led me to check out what appears to be the first Saskatchewan record of the Showy Lady's Slipper, *Cypripedium reginae* Walter. Eric had just returned from a family vacation at Madge Lake, where he had enjoyed looking for plants and using his newly-acquired camera. He was eager to talk about his experiences, and my interest in them reached a peak when he mentioned that he had been shown a Showy Lady's Slipper. Two specimens of this plant had been brought to Brenda Cholin, the park naturalist at Duck Mountain Provincial Park, one of which was pressed for the herbarium at Madge Lake while the second was kept alive in a container.

A few days later my wife and I travelled to Madge Lake to obtain as much data as possible on the discovery and to photograph any plants remaining in the wild. Brenda Cholin showed us the herbarium specimen, which had its bloom intact and was in good condition, and the live plant, now without its blossom. The two plants had been collected by Cathy Mollard and Les Schmidt, recreational assistants in the Park, who had found them on July 7, 1977, while working with a group of children. They brought the flowers to Brenda for identification, without realizing how rare they were in the province. Taken by Cathy Mollard to the site, we found three stems from which the blooms had apparently dropped, arising from a single root stock. We

photographed the plant for the record, but were unable to find any others in a search of the area. To protect the plant, we are not giving the exact location of this observation.

It is planned to donate the specimen from the Madge Lake herbarium to the Fraser Herbarium at the University of Saskatchewan in Saskatoon, and the live plant has been brought to Regina where Elizabeth Parkin, horticulturist with the Wascana Centre Authority, has it in her care.



Fenton R. Vance  
Showy Lady's Slipper near Mafeking,  
Manitoba



# OBSERVATIONS ON SOME BUTTERFLIES AND SKIPPERS FROM THE LYLETON — GAINSBOROUGH REGION, MANITOBA — SASKATCHEWAN

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During the summers of 1974, 1975 and 1976, whilst I was carrying out research on Clay-colored Sparrows in extreme southwestern Manitoba, I made incidental observations on butterflies and skippers in the area. I did not undertake a large-scale collection of specimens; hence, this list is based mostly on field identification using binoculars, although a few individuals of difficult groups, such as fritillaries and blues, were netted, identified and then released.

The region in question is about 800 km<sup>2</sup>, incorporating the towns of Gainsborough in Saskatchewan and Lyleton and Pierson in Manitoba. The topography of the area is level to gently rolling, at an elevation of 460 to 500 m above sea level. The climate is typically continental, with wide seasonal variation in temperature. The normal mean daily temperature in January is between — 17° and — 20°C, and in July is about 20°C. The average annual precipitation is from 40 to 46 cm.<sup>1 2</sup>

Originally mixed-grass prairie, the vegetation has been greatly changed since the first homesteaders settled in the late 1800's. At present, only a few isolated pockets of native prairie remain. The land is now intensively farmed for cash crops where the land is fertile, with sandy areas used for grazing. Numerous aspen (*Populus tremuloides*) bluffs and extensive stands of shrubs, mainly snowberry (*Symphoricarpos occidentalis*) and silverberry (*Elaeagnus commutata*), are scattered throughout the region.

## SPECIES LIST

This list follows the common and scientific names as used in Dos Passos' 'synonymic list of the Nearctic Rhopalocera'<sup>3</sup> and the order follows Klotz's 'A field guide to the butterflies'<sup>4</sup>. The period during which a species was observed is given in terms of months, and unless otherwise specified each species was reported in each year.

**EYED BROWN** *Lethe eurydice* (Johannson). Fairly common in wet grass meadows; July and August.

**PRAIRIE RINGLET** *Coenonympha ino nata* Edwards. Fairly common in grass areas; May and June. Ringlets and Eye Browns occurred in much the same type of habitat, but at different times of the summer.

**MONARCH** *Danaus plexippus* (Linnaeus). Widespread: June - August. Milkweeds (*Asclepiadaceae*) are relatively scarce and local in the area, hence it seems more than likely that the majority of Monarchs seen are transients.

**GREAT SPANGLED FRITILLARY** *Speyeria cybele* (Fabricius). Occasional along roadsides and in gardens; June. One netted in a Lyleton town garden on June 1976.

**APHRODITE** *Speyeria aphrodite* (Fabricius). Occasionally seen over grassy meadows west of Lyleton; July. Not recorded in 1974. Two were netted on July 1975 near a slough overgrown with willows (*Salix* spp.) in a sandy, gravel pasture 2 km west of Lyleton.

**MEADOW FRITILLARY** *Boloria todia* (Holland). Frequent in pastures, along rights-of-way, and near sloughs and marshes; May - June.

**SILVER-BORDERED FRITILLARY** *Boloria selene* (Denis & Schiffermüller). Only two records; two individuals netted on 24 July 1975 in a marsh one km south of Pierson.





Pearl Crescent

R. W. Knapton

**SILVERY CHECKERSPOT** *Melitaea nycteis* Doubleday. Frequent in damp pastureland; June - July.

**PEARL CRESCENT** *Phycoides tharos* (Drury). Widespread, in a variety of habitats; June - July.

**POLYGONIA** spp. A ragged individual photographed on 15 May 1974 in a Lyleton garden. Probably either *P. comma* (Harris) or *P. satyrus* (Edwards).

**MILBERT'S TORTOISESHELL** *Nymphalis milberti* (Godart). Widespread in pastures, rights-of-way and gardens; May - June. The first butterfly recorded each spring.

**MOURNING CLOAK** *Nymphalis antiopa* (Linnaeus). Widespread and fairly common in open country; May - August.

**RED ADMIRAL** *Vanessa atalanta* (Linnaeus). Widespread, particularly near sloughs, bluffs and gardens; May - July.

**PAINTED LADY** *Vanessa cardui* (Linnaeus). Decidedly uncommon, in ungrazed pasture and along rights-of-way; May - August. Not recorded in 1976.

**WICEROY** *Limenitis arcippus* (Cramer). Frequent along roadsides and in ungrazed pasture; June - July.

**WHITE ADMIRAL** *Limenitis arthemis* (Drury). A common butterfly near bluffs, wooded sloughs and in town gardens; May - July.

**SILVERY BLUE** *Glaucopsyche lygdamus* (Doubleday). Widespread throughout the area; June - July.

**SPRING AZURE** *Celastrina (Lycaenopsis) argiolus* (Linnaeus). Like the Silvery Blue, also widespread throughout the area; May - June. No other 'Blue' identified.

**BLACK SWALLOWTAIL** *Papilio polyxenes* Fabricus. Frequent in pastures, town gardens and rights-of-way; May - July.

**TIGER SWALLOWTAIL** *Papilio glaucus* Linnaeus. Widespread throughout; June - July.

**ALFALFA/COMMON SULPHUR** *Colias eurytheme* Boisduval/*C. philodice* Godart. Widespread over grassy areas in May and June.

**PINK-EDGED SULPHUR** *Colias interior* Scudder. Only two records; two individuals netted on 29 June 1975, Pierson Wildlife Management Area.

**CABBAGE WHITE** *Pieris rapae* (Linnaeus). Common and widespread; May - August.



**CHECKERED WHITE** *Pieris protodice* Boisduval & LeConte. Frequent along rights-of-way and in pastures; May - July.

**SILVER-SPOTTED SKIPPER** *Epargyreus clarus* (Cramer). Frequent along rights-of-way and in gardens; May - June.

**CHECKERED SKIPPER** *Pyrgus communis* (Grote). Recorded in gardens in Lyleton in May and June, 1975 and 1976.

**LONG DASH** *Polites mystic* (Scudder). Recorded in grassy areas; May - June. No other skipper positively identified.

I thank W. B. McKillop and W. Preston for comments on the manuscript.

<sup>1</sup>RICHARDS, J. H. & K. I. FUNG 1969. Atlas of Saskatchewan. University of Saskatchewan, Saskatoon. 236 pp.

<sup>2</sup>WEIR, T. R. 1960. Economic Atlas of Manitoba. Dept. of Industry & Commerce, Prov. of Manitoba. 39 pp.

<sup>3</sup>DOS PASSOS, C. F. 1964. A synonymic list of the Nearctic Ropalocera. Peabody Mus. Nat. Hist., Memoirs of Lepidopterists' Society No. 1. 125 pp.

<sup>4</sup>KLOTS, A. B. 1964. A field guide to the butterflies. Houghton Mifflin Company, Boston. 349 pp.



Tiger Swallowtail

F. W. Lahrman



# SNAKES

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Though maligned since the advent of Christianity, snakes were revered and worshipped by many cultures. North American Indians attached spiritual significance to the snake and its habit of shedding its skin was considered evidence of its longevity and even immortality.

Reptiles made their appearance during the Mesozoic era approximately two hundred million years ago and dominated the earth under the rule of the dinosaur. Their reign however was short lived and only those species who adapted to the changing environment survived. Today snakes represent one facet of that reptilian adaptation and its unique characteristics have arisen in answer to the laws of survival.

In Canada there are twenty-three species of snakes, the majority of which are completely harmless, and only in the western provinces and Ontario do poisonous varieties occur. In Canada any snake with a pointed tail is harmless.

Snakes rely heavily on their senses for survival with sight probably occupying the position of greatest importance. The eyelids in snakes have become fused together to form a fixed transparent structure called the spectacle thus affording continual protection to the underlying eye. The middle and external ear are absent, consequently sound waves transmitted in air play a minor role in the hearing of the snake. More importantly vibrations transmitted through the ground to the inner ear help in providing information about the environment. Odours are detected not only by the nostrils but also by the tongue which contrary to popular belief is not a "stinger". Two specialized structures in the roof of the mouth called Organs of Jacobson which also contain olfactory epithelium like the nose receive particles picked up by the tongue and relay the information to the brain. In



Wayne Lynch  
Western Plains Garter Snake

rattlesnakes and other pit vipers an accessory sensory organ exists in the form of a temperature sensitive pit located midway between the eye and the nostril.

Many people may have found the discarded skin of a snake exact in every detail but colourless and consisting of a friable transparent replica of its owner. Unlike fish whose scales are detachable the scales of a snake are merely folds in the skin with a common attachment at their base. In humans the superficial layers of the skin are continually being rubbed off in bits and pieces and replaced by growth from deeper layers. In snakes there is a definite moulting period when the outer layer of the skin is shed in its entirety. The number of moults is variable among species and even among different individuals within a species but is dependent upon such factors as rate of growth,





Bullsnake

Wayne Lynch

temperature, parasites and moisture in the environment. The clouding of the spectacle heralds the onset of moulting. For two to three weeks the snake is quite irritable and anorexic and usually resorts to hiding as a result of its impaired vision. Several days before the actual moult the eyes clear again and the snake emerges. The skin is shed from the lips backwards and is worked off by rubbing against a stone or stick. The rattlesnake's "rattle" is a specialized skin structure consisting of interlocking segments of keratin, the same material from which hair and fingernails are made. A new segment is added each time the skin is shed but rarely are more than eight to ten segments possessed by a snake in the wild because of breakage. Consequently the age of a rattlesnake cannot be calculated from the number of tail segments.

All snakes swim and in addition many are adept at climbing. Either of these methods may be utilized in capturing prey which is ultimately subdued by constriction, injection of poison or ingestion alive. A full com-

plement of teeth are a part of every snake's armature but in spite of this it is unable to chew and must swallow its prey whole.

Spring initiates the ritual of courtship and in the case of garter snakes and rattlesnakes which hibernate in communal dens, mates are readily at hand. The male and female may glide along beside each other, the male caressing the female with his chin and flicking his tongue over her body. Unlike other vertebrates, snakes and lizards have developed paired copulatory organs at the base of the tail known as hemipenes. Only one hemipenis however is used at a time; the choice of right or left being determined by the side which is nearest the female. In many species tiny spiny projections cover the organ and help keep it in place within the female. Mating lasts up to several hours. Development of the young occurs in eggs which are either laid or retained within the body of the female ensuring a more secure and homogeneous environment. The eggshells are soft and leathery and in late August with the aid of a specializ-



ed tooth on the nose the young snake works his way free. From the outset the young must fend for themselves for no parental care is given.

All animals have enemies and several methods of defense have evolved in reptiles. Poisonous individuals rely on venom which is injected by a pair fangs. Rattlesnakes use this type of defense but prefer flight to fight and use their "rattle" to caution potential adversaries. The Smooth Green Snake and others use noxious secretions produced by their anal glands as a deterrent. Mimicry is successfully used by the Fox Snake and Bull Snake which vibrate their tails in an attempt to imitate their poisonous relatives. The Academy Award however goes to the Hognose Snake. When threatened it inflates its neck in the manner of a cobra, hisses and strikes repeatedly with a closed mouth. If this fails to intimidate the enemy it rolls on its back, jerks and writhes momentarily and then lies perfectly still with its mouth gaping.

Snakes are most active when temperatures range between 70-90 F. Unlike birds and mammals who control the temperature of their bodies at

a constant level (homeothermic) using hair and feathers for insulation the snake has a body temperature similar to its environment (poikilothermic). When temperatures drop the snake becomes sleepy and sluggish and throughout Canada winter is a time of hibernation. Animal burrows, tree roots and building foundations serve as suitable locations.

The modern proponents of Freudian psychoanalysis would define a herpetologist as one whose childhood sexual identity was misdirected resulting in a pathological preoccupation with a socially acceptable phallic replacement. But when all is said and done, maybe some people just like snakes?

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Bullsnake

F. W. Lahrman



# PROBABLE CASE OF DEATH-FEIGNING BY WOOD FROG

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While exploring a wooded swamp-like area in the back slope zone of the sand dunes at Good Spirit Lake Provincial Park (1400, May 21, 1977), I encountered several wood frogs, *Rana sylvatica*. I collected one specimen, intending to photograph and later release it. It was put in a ventilated jar with just enough water to keep it moist.

About an hour later, I looked at the frog and was surprised to see that it appeared dead. I removed it from the jar and examined it briefly. The legs were limp, outstretched away from the body, eyes half-closed, and no breathing could be discerned. I held it loosely for about two minutes, and it did not stir or attempt to escape; when captured it had seemed vigorous and healthy. It showed no sign of emaciation or disease, yet was, inexplicably, apparently dead. It was about 35 mm in body length, and of undetermined sex.

I decided to at least return the dead amphibian to its natural habitat, and walked a short distance to a small slough, also in the wooded area. I tossed in the "corpse", and to my surprise it immediately swam away.

There have been previous reports

of death-feigning amphibians both involving the Canadian Toad, *Bufo hemiophrys*<sup>1 2</sup>. Although this behaviour has also been recorded for several other amphibian species, has not, to my knowledge, been previously recorded for *R. sylvatica*.

It is generally accepted that death feigning is employed as a predator escape device. McNicholl<sup>1</sup> cites observations concerning the unwillingness of tiger salamanders, *Ambystoma tigrinum*, to take unmoving food or prey, which at times includes frog and toads. My own observations over the years, with captive tiger salamanders, and several species of native snakes, as well as exotic snake agree with his observations. It would seem that many amphibians and reptiles are incapable of recognizing an organism as potential prey unless it moves. Death-feigning in the wood frog would appear to be of definite advantage as protection against animal as well as human predators.

<sup>1</sup>McNICHOLL, M. K. 1972. An observation of Apparent Death-feigning by a Toad. *Blue Jay* 30:54-55.

<sup>2</sup>NERO, R. W. 1967. A Possible Record of Death-feigning in a Toad. *Blue Jay* 25:193-194.



Wood Frog

Gary W. Se



# CHANGING PATTERNS OF CORVIDAE ON THE PRAIRIES

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Few groups of birds on the prairies have shown such pronounced changes over the last two centuries as have the *Corvidae*. Considered to be among the most intelligent bird species, it is interesting to note how they have adapted to changing conditions.

In the days of the buffalo, the raven was common and the magpie was widely distributed. With settlement, the magpie disappeared for 10 to 40 years, while the raven vanished and the crow increased. The main resurgence of the magpie was within my memory, for five summers of field work near Yorkton in the 1940's failed to locate a single nest, and as late as 1950 one could be out all day on a Christmas Bird Count at Yorkton with only a single magpie sighting. Even more recently, all three species have adapted to city life.

Prior to 1875, ravens were present throughout the breeding season across the present prairie provinces, extending down into the Dakotas. Stewart<sup>33</sup> has summarized the North Dakota breeding season records, of May, Maximilian, Audubon and Harris, Cooper, and Grinnell, from 1823 through 1874, chiefly along the Missouri River. Stewart ascribed the disappearance of the raven at the end of the century to the widespread use of poisons and baited traps, but did not mention the disappearance of the buffalo, whose carcasses provided the scavenging ravens with carrion.

Records by Richardson, Hood and Drummond in the 1820's<sup>30</sup> and by Blakiston in the late 1850's,<sup>3 4</sup> indicate that the raven was then commoner than the crow at Carlton and Cumberland. "All the year, common, pounds" was the notation for the raven by the Franklin expedition men, while "Summer, in flocks" was the corresponding entry for the crow. Blakiston found the raven "very

generally distributed . . . most numerous on the buffalo plains of the west" and studied a roost of over 50 birds near Carlton in winter. On an overland trip from Carlton to near the present site of Dinsmore,<sup>16</sup> Blakiston found several nests of the raven and no nests of the crow. Indeed, the crow was so rare that Blakiston was "never fortunate enough to obtain a specimen."

The Earl of Southesk<sup>32</sup> on July 6, 1858 recorded an empty raven nest near the present site of Craven in the Qu'Appelle Valley. Macoun,<sup>35</sup> in his trips of 1872, 1879 and 1880, found the raven to be "frequent on the western plains," while the crow was "common on the western plains," possibly indicating more equal numbers of the two species than may have existed 50 years earlier.

After the buffalo declined, and as the first settlers appeared, the raven was no longer a breeding bird, though for some years it came south regularly in winter. Perhaps the last summer sighting was by Raine<sup>29</sup> on June 16, 1893 at Rush Lake.

When John Gunn settled at Good Spirit Lake in 1888, the raven was quite common each winter for about 10 years.<sup>15</sup> By the time Laurence B. Potter<sup>26</sup> settled at Eastend in 1901, the raven was virtually gone; he saw three in the next 15 years and then no more.

Coues,<sup>8</sup> in his travels with the U.S. Northern Boundary Commission in 1873 and 1874, found crows were "not very common . . . though I saw a good many along the Souris river . . . . A nest containing five eggs, with the female parent, was secured on the Quaking Ash (Poplar) River, June 26, 1874." In 1882-84, Ernest Thompson (Seton)<sup>35</sup> similarly considered the two crow nests he found worthy of description in detail, and said it was only "common," hence much less











frequent than those species he listed as "abundant" or "very abundant."

The omnivorous crow adapted very rapidly to the increasing numbers of white men — traders, ranchers and then farmers. As early as 1885, George Guernsey<sup>35</sup> considered the crow to be common, his highest ranking of frequency, at Fort Qu'Appelle; and Spreadborough in 1892 considered them numerous at Indian Head, with a nest in a willow on May 6. By 1895, Spreadborough said they were "found in pairs nearly all over Saskatchewan . . . wherever there was wood . . . common at Crane Lake, Medicine Hat, Cypress Hills, Moose Jaw, and around Old Wives Lake and creek, also at Wood Mountain . . . May 8th, 1894, examined a number of nests at Medicine Hat, but found only one egg; a few were breeding at Crane Lake, June 12th; found a nest with four young ones; at the east end of Cypress Hills a few pairs were breeding the last week in June." Also in 1885, Loring<sup>17</sup> found the crow abundant at Wingard, and Edward Arnold<sup>1</sup> near Fort Qu'Appelle saw crows "flying around in all directions with eggs in their bills."

Although they now qualified as "common", crows had not yet achieved a fraction of their present numbers. A. C. Bent,<sup>2</sup> in his 1905 and 1906 visits to the Maple Creek area, saw only a few pairs of crows, mostly near Crane Lake, finding two nests the first year and three the second. As late as 1922, C. G. Harrold<sup>12</sup> saw only half a dozen pairs of crows at Old Wives Lake.

The explanation is simple. Because of annual prairie fires, there were very few trees. Indeed, when the settlers arrived, there were only a few shrubs around the wet margins of sloughs and occasional trees in protected river valleys. When the Houstons settled at Tyvan in 1903, crows occurred, but were not common because they lacked nesting sites anywhere nearby for many years; their numbers increased later.<sup>24</sup> H. H. Pittman,<sup>25</sup> who first visited Wauchope in 1905 and 1907, and then settled there in 1913, reported how the crows

increased in southeastern Saskatchewan, which after the turn of the century, "since the choking of the prairie fires, is rapidly becoming covered with little groups of trees, or bluffs, and in those the crows nest plentifully." L. B. Potter<sup>26</sup> recorded that crows increased continuously in the Cypress Hills from his arrival in 1901 until about 1930.

Simultaneously, further north the settlers began to make clearings in the poplar and mixed forest, and to plant crops. The resulting diversity allowed such areas to support an increased crow population.

It is less obvious why crows more recently have settled in residential areas of our cities, though it may relate in part to a rather recent reticence to use firearms, even BB guns, within the city. During our first six years in Saskatoon, it was an annual ritual to drive into the country in late March to seek the first crow of the year. Occasionally a flock would fly overhead or a few would perch in trees by the river bank, but in the past five years, there has been no need for a trip into the country, for crows stake out their territory on our residential street and caw loudly at our window in March. The invasion of residential streets by breeding crows has occurred over the last ten years. The first nest record for University Drive was in 1968 and by 1970 the Saskatoon bird record cards, as reported in *Saskatoon Bird Review* and then in *Saskatoon Field Notes*, began to report crows in residential areas throughout May and June for the first time.

Somewhat earlier, in the 1950's, and somewhat further north, at Prince Albert<sup>17</sup> and Nipawin, ravens became "citified," losing their fear of man and appearing throughout the winter on city streets. Maurice Street<sup>34</sup> reported that about 1953, ravens "began to enter Nipawin in search of garbage scraps or any other tidbit . . . as many as 40 ravens have been observed near the depot awaiting their breakfast. As many as a dozen or more have been seen at one time perched on telephone or power poles along First





Common Crow

F. W. Lahrman

Avenue, Nipawin's main thoroughfare. From the poles, they fly down to the street in search of food, walking about and only reluctantly moving out of the way of traffic — pedestrians or cars."

The magpie has perhaps the most interesting story of all. Andrew Graham's extensive natural history observations from Hudson's Bay, 1767-1791,<sup>38</sup> stated that magpies "are plenty in the interior part of the country... our people meet with them inland at all seasons." In 1822, at the Red River Colony, now Winnipeg, Rev. John West<sup>37</sup> listed the magpie as one of only three winter birds "and that but seldom." In the same decade, Richardson<sup>30</sup> recorded it as "plentiful in the interior prairie lands of America... only stray individuals passing to the eastward of... Lake Winnipeg."

As the buffalo retreated further west, the magpie retreated as well. Blakiston<sup>34</sup> in 1858 found it a resident during the entire year on the

Saskatchewan, but only "occasionally observed" at Carlton; while H. Y. Hind<sup>14</sup> that year found it very numerous in the thin woods fringing the lakes near Fort Qu'Appelle. In 1873, A. R. C. Selwyn<sup>31</sup> found "a good many" along the North Saskatchewan from Fort Pitt to the present site of Langham.

Peter and Pascal Dumont and Matthew Cook told Frank L. Farley<sup>10</sup> how the magpies were numerous near Camrose, Alberta, during the buffalo days "when flocks would follow the hunting parties and live on the refuse of the hunt," but they disappeared from that area in the early 1880's. C. W. Nash told Ernest E. Thompson (Seton)<sup>35</sup> that until about 1870, magpies occurred in the Spruce Woods 20 to 30 miles west of Portage la Prairie. By 1875-1883, the magpie was very common only to the west of the Touchwood Hills and not seen east of Fort Ellice.<sup>20</sup>

When John Gunn settled at Good Spirit Lake in 1887, magpies were





Black-billed Magpie

Gary W. Seif

common for the first ten years, then practically disappeared.<sup>15</sup> In 1891, Walter Raine<sup>28</sup> was told that magpies occurred at Moose Jaw, but he saw none during his first two visits to Saskatchewan, and found no nests.

By the turn of the century, magpies were restricted to the foothills of the Rockies and the Cypress Hills. Laurence B. Potter<sup>26</sup> found them common enough at Eastend from 1901 to 1904, but then they disappeared for six years. This is confirmed by A. C. Bent's studies<sup>2</sup> of 1905 and 1906 near Maple Creek, where none were seen during two successive summers, though an unused nest from a previous year was found.

Potter noted a gradual increase after the magpie returned to the southeastern slopes of the Cypress Hills in 1910. Meanwhile the forerunners of the Alberta resurgence reached Lacombe in 1911<sup>11</sup> and spread to Belvedere,

northwest of Edmonton, by 1919.<sup>13</sup>

The annual reports of the Saskatchewan Game Commissioner told how magpies became noticeably more common in the winter of 1922-23, when Robert Perrin of Maple Creek shot 26. In the following year they increased at Maple Creek, Laura, Lestock, Whitewood and Oxbow.

S. Humphry<sup>19</sup> reported that the first pair appeared at Unity in 1926, that they bred in 1931 and were common by 1932. They appeared at Sheho in 1926,<sup>23</sup> with step-like increases in 1933 and again in 1949. They appeared at Percival in 1939 and were common after 1934 (E. M. Callin, pers. comm.). They were first seen at Nipawin in 1930, with the first nest found by Maurice G. Street in 1935.<sup>17</sup> W. E. C. Todd's Carnegie Museum expedition<sup>36</sup> of 1932 to central Saskatchewan found them local at Elbow. The two years of major magpie increase at Wauchope were 1939 and



1949, and at Yorkton, 1951 and 1958. They reached La Ronge in 1958 (John Finch, fide M. Ross Lein), and that year all 32 Christmas Bird Counts recorded magpies. Since then magpies have remained as a very common or abundant bird throughout Saskatchewan, reaching even the most remote settlements of the far north.<sup>22</sup>

The movement into the streets of Saskatoon has occurred only in the past 10 years. Whereas previously a magpie might wander into our yard several times a year, since the fall of 1972 they have been almost daily visitors, and for four years the crow and the magpie have become the most conspicuous species to be seen and heard in the half-mile walk from my home to the University campus. Robert Lister tells me that magpies have similarly become year-round species in residential areas of Edmonton within the past 10 years.

The appearance of Merlins as a nesting species within residential areas of Saskatoon in the past five or six years has been possible because of the availability of crow and magpie nests for them to nest in. When one considers the destruction of eggs and young of smaller birds carried out by crows and magpies, it will be appreciated that the changing numbers of these species have far-ranging effects.

This material could not have been gathered without the help of my wife, Mary.

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- <sup>2</sup> BENT, A. C. 1907 and 1908. Summer birds of southwestern Saskatchewan. *Auk* 24: 407-430 and 25: 25-35.
- <sup>3</sup> BLAKISTON, T. 1859. Scraps from the far west. *Zoologist* 17: 6318-6325.
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Common Raven

F. W. Lahrman



# ADDITIONS TO "BIRDS OF THE ROSETOWN-BIGGAR DISTRICT, SASKATCHEWAN"

GUY J. WAPFLE, Box 1153, Biggar, Saskatchewan S0K 0M0

Shortly after the publication of any local bird list, a number of new or unusual birds are bound to turn up in that locality. "*Birds of the Rosetown-Biggar District, Saskatchewan*" is no exception and, since its publication in August, 1975, a number of interesting observations have been made in the area.

The following records include data on seven new species noted since 1975. All recent observations of rare or unusual birds are also included in this report. Where a species has five or fewer previous records in the Rosetown-Biggar area this has been mentioned in the species account. "Argo Bush" is 10 miles southwest of Biggar.

The number of species of birds definitely identified in the Rosetown-Biggar study area now stands at 243 (as of July 9, 1977). In addition, five species remain on the hypothetical list: Western Sandpiper, Black-necked Stilt, Band-tailed Pigeon, Chimney Swift and Dickcissel. Except where noted, all observations were made by the author.

The author wishes to thank the following people for their help on field trips, bird counts, and observations in the Biggar district: P. de Bussac, R. Chulach, D. Dueker, J. Goring, W. C. Harris, S. M. Lamont, M. L'hoir, A. de Moissac, M. Newton, D. H. and W. E. Renaud and R. A. Waple. Special thanks to Wayne Renaud for his encouragement and suggestions on this article.

**RED-NECKED GREBE.** On May 2, 1976, an adult was swimming with several dozen ducks along the north shore of Middle Van Scoy Lake. There were only two prior records for the area.

**WESTERN GREBE.** A dead adult was found on a peninsula in the sewage lagoon just south of Biggar on June 14, 1976. A single bird at Castlewood Lake on September 12, 1976 is only the second fall record for the district.

**WHITE PELICAN.** A. L'hoir found a single bird dead in his field southeast of Whiteshore Lake on August 6, 1975: the author and R. A. Waple verified the identification. Twenty-two pelicans were noted flying north, 6 miles east-southeast of Biggar on April 18, 1976.

**TURKEY VULTURE.** R. A. Waple reported an individual soaring south over Biggar on May 14, 1976. This represents the fifth record since 1968.

**BROAD-WINGED HAWK.** In 1976, this species was seen on May 2 (an adult low over The Van Scoy Lakes) and May 19 (an immature flushed from aspen woods 2 miles south of Duperow).

**FERRUGINOUS HAWK.** A single bird was soaring high over Biggar on September 6, 1975.

**PEREGRINE FALCON.** In 1975 this species was recorded on September 18, an immature in a park in Biggar (as close as 20 feet) and September 27, one flying amongst a flock of 50 Lapland Longspurs, three miles northwest of Feudal. Single birds were pursuing House Sparrows in town on April 11 and 12, 1976. Four previous occurrences have been reported.

**RING-NECKED PHEASANT.** Pheasants appear to have increased in the region recently. Jim Goring reported a male, 6.5 miles west of Biggar in mid-November, 1975. In 1976, a male flushed with eight Sharp-tailed Grouse, 15 miles south of town on March 12; and another male was seen on the west outskirts of Biggar



on March 25 (R. A. and G. J. Wapple). Possible local breeding is indicated with the sighting of a male bird crowing in "Argo Bush" on May 26, 1976. This was reported by Murray Newton, who is familiar with this species, having hunted it in the past. Prior to 1975, three sightings had been made by the Renauds in the area.

**VIRGINIA RAIL.** Single birds were flushed from a sedge and hummock complex at the east end of Castlewood Lake on June 14 and 15, 1976. On June 15, after flushing the adult bird, a search of the immediate area turned up a broken egg. The egg was quite different in appearance from the Sora's (a nest of the latter was discovered on the same date) and I feel that the broken egg was indeed a Virginia Rail's.

**WESTERN SANDPIPER.** On May 30, 1977, the writer, R. A. Wapple and R. Chulach studied four Western Sandpipers feeding alone on a mudflat three miles northwest of Catherwood Lake. From distances ranging from 20-35 feet, we noted the rusty-brown crown and back, black legs, quite distinct v-shaped breast markings and fairly long bill with a noticeable droop at the tip. The birds were studied for 10 minutes before they flew off to the northeast. There is but one previous record locally (on July 25, 1974), and only one prior provincial record.

**\*SHORT-BILLED DOWITCHER.** The first confirmed record of this species was on September 8, 1975, when W. E. Renaud, R. A. Wapple and the writer studied one on a mudflat, just southwest of Perdue. We were able to approach within 15 feet of the bird. When it flushed, it gave a three-note call and Renaud, who is familiar with the species in Arctic Canada, confirmed the individual as a Short-billed Dowitcher. Two dowitchers were carefully identified on a mudflat four miles southeast of Keppel on May 12, 1976. These birds also gave a three-note call when flushed and were believed by the writer to be this species.

\*New species for the district.

**\*BUFF-BREASTED SANDPIPER.** The first local record was a group of three identified by D. H. Renaud and G. J. Wapple one mile west of Catherwood Lake on May 22, 1977. The sandpipers allowed a long study from 20-30 feet as they fed in a wet weedy field.

**HUDSONIAN GODWIT.** One observed at Catherwood Lake by W. E. Renaud and G. J. Wapple on September 8, 1975. On July 11, 1976 a flock of 18 (with 1 Marbled Godwit) was found at a small pond, north of Duperow.

**BONAPARTE'S GULL.** There have been two additional records of this distinctive bird. In 1975 an adult was flying amongst 100 Franklin's Gulls south of Biggar on July 17; in 1976, a pair of gulls foraged at the sewage lagoon south of town on April 27. On both occasions the white wing triangle was seen very clearly.

**GREAT-CRESTED FLYCATCHER.** An adult was flycatching vigorously from dead poplars in a shelterbelt 3 miles north of Duperow on September 6, 1975. The Renauds had recorded four other dates.

**SAY'S PHOEBE.** On May 19, 1976 one was noted along a fence line in "Argo Bush".

**BLUE JAY.** R. A. Wapple found a single bird in Biggar on January 3, 1976. Another jay was found 15 miles south of town by R. Chulach, R. A. Wapple and G. J. Wapple on September 26, 1976. This individual was associated with a magpie. During the Biggar Christmas Count on December 24, 1976, W. C. Harris and S. M. Lamon heard a single Blue Jay in "Argo Bush."

**\*BOREAL CHICKADEE.** On October 16, 1975, R. A. Wapple and the author observed an individual in coniferous trees in a park in Biggar. From distances of 3-10 feet we obtained the following characteristics: rusty sides, brown cap and back and hoarse voice. A direct comparison was made between this bird and the single Black-capped Chickadee with which it was travelling. Both of us are com



pletely familiar with both species, having observed dozens of them in northern Saskatchewan and the Rocky Mountains. This is the species' first appearance in the Rosetown-Biggar area.

**MOCKINGBIRD.** A single bird was recorded on June 13, 1976, 1.5 miles east of Duperow by P. de Bussac, A. de Moissac and the writer; and another in Biggar on June 3 (R. A. Wapple) and June 4 (R. A. and G. J. Wapple), 1977. Both birds were singing quite vigorously and were assumed to be males. These observations represent the second and third local sightings, the first being on June 26-28, 1972.

**WOOD THRUSH.** On May 27, 1976, R. A. and G. J. Wapple studied an adult Wood Thrush in a park in Biggar from about 15 feet away, making a new species for the area, and probably the fourth record for Saskatchewan. In comparing the bird with a Swainson's Thrush, we found that it was slightly larger in size, the back was much rustier, and the breast spots were larger and more numerous. The bird foraged along the ground in a thick shrubline for some 20 minutes, after which we left the area.

**HERMIT THRUSH.** This species was noted on October 2, 1974 (1) and in 1976 on April 26 (1), September 18 (1), September 25 (2), September 26 (4), a flock in farmstead, 12 miles southwest of Biggar), and October 13 (1), (R. A. Wapple). Except for the record on September 25, all observations were made at the park in Biggar.

**EASTERN BLUEBIRD.** The first Rosetown-Biggar sighting occurred on September 19, 1975, when I noted a male in a roadside ditch in "Argo Bush." The rusty-orange breast was seen clearly at 15-30 feet. The bluebird fed from a telephone line with a mixed flock of 5 male and 1 female Mountain Bluebirds, 7 Robins, 1 Palm and 10 Yellow-rumped Warblers. It left the area, alone, after about 15 minutes of feeding.

**TOWNSEND'S SOLITAIRE.** Two

solitaires were found in the park in Biggar on April 12, 1976. R. A. Wapple observed two more on the late date of May 29, 1977, as close as 5 feet, just northwest of town. There had been only three previous solitaire records.

**NASHVILLE WARBLER.** On September 3, 1976, I carefully identified one at the park, with the following field marks: small size (no more than 4 inches), greenish upperparts, yellow underparts, lack of wingbars, and white spectacles around the eyes clearly visible. The Nashville was studied for 10 minutes from 15-20 feet. The Renauds had but one previous record, on September 5, 1973.

**MAGNOLIA WARBLER.** A close check of flocks of Yellow-rumped Warblers has resulted in an increased number of sightings of this species. All observations have been of female or immature birds, and all were in or near Biggar. 1975: September 7 (3 with 15 Myrtles); September 16 (2 with 10 Myrtles); September 17 (2). 1976: September 24 (5). A male was present in town on May 12, 1977.

**CAPE MAY WARBLER.** From the park in Biggar come these observations: 1975: September 12 (1 pair), and September 17 (a male in full breeding plumage); 1976: September 12 (a single female). It is perhaps interesting to note that all these records came from the same stand of conifers in the park.

**\*BLACK-THROATED BLUE WARBLER.** On May 17, 1976, R. A. Wapple and the writer studied a female in deciduous trees at the park in Biggar for 45 minutes. From distances of 6-20 feet, the characteristics were: olive-green back, greenish underparts, distinct white eyeline and the small, white wingspot on the lower primaries (at the base). The warbler was exceedingly tame as she fed in the lower branches of the trees.

**BAY-BREASTED WARBLER.** A male was seen in the park in town on June 2, 1976 by R. A. Wapple. This was the fourth local record.



**CONNECTICUT WARBLER.** We located a pair in our yard in Biggar on September 5, 1975, noting the complete white eye-ring. There is but one prior sighting, one bird on August 22 and 23, 1972.

**WESTERN TANAGER.** Single males in Biggar seen separately by R. A. and G. J. Wapple on May 31, 1976, were likely the same bird. This provides the third record of this species for Rosetown-Biggar.

**RED CROSSBILL.** Both this and the next species have increased in the area recently, with all records coming from the park in Biggar where there are many coniferous trees. In 1975, Reds were seen on: October 13 (1), 15 (3) and 29 (6); November 2 (1) and 4 (1). In 1976 they were spotted on: May 13 (a pair); October 23 (3), and November 8 (a pair). Prior to this influx, there had been but two records.

**WHITE-WINGED CROSSBILL.** Observed in 1975 on November 11 (4), 12 (1), 13 (2), 14 (a pair), and 18 (1). The only record away from Biggar was at a farm southeast of town on December 24, where a male was located by D. H. Renaud and the author during the Biggar Christmas Count. In 1976, sightings were for February 13 (a pair) and 20 (1). Three previous occurrences are listed for the area.

**LARK SPARROW.** At the park in

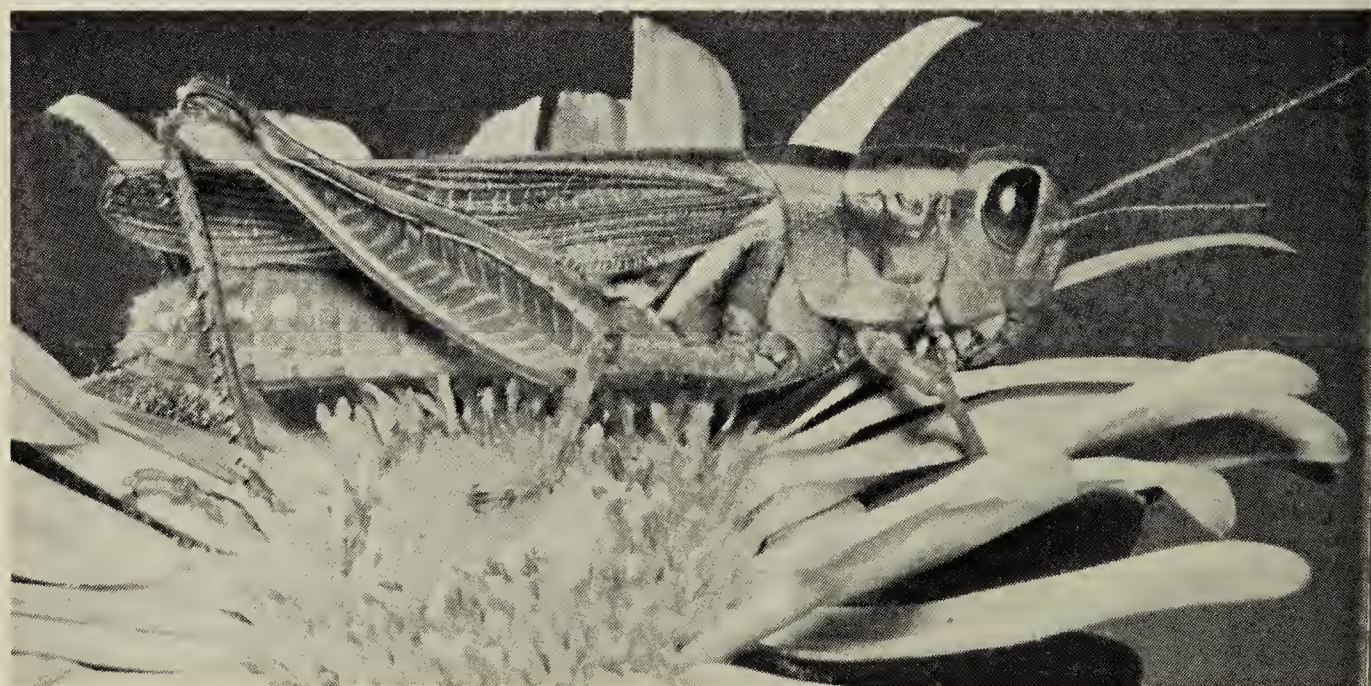
Biggar on May 22, 1976, a single bird was singing. A pair of Lark Sparrow was on territory 2.5 miles south of town on May 23 and June 19, 1977 but we were unable to locate a nest. This handsome sparrow was noted four times before 1976.

**SWAMP SPARROW.** The fourth local record was registered on May 15, 1977, a single bird in long grass at the park in town.

**McCOWN'S LONGSPUR.** Another observation of this species from the southern part of the study area came on May 23, 1976, where R. Chulach, R. A. Wapple and the writer found eight males and one female in cultivated stubble 2 miles southeast of Rosetown. A displaying male 7 miles north of Rosetown was noted later that same day.

**\*SMITH'S LONGSPUR.** The first district observation was on May 15, 1976, when at least 125 Smith's were located (in association with over 375 Lapland Longspurs) in a ploughed slough bottom, just south of Leney. Several distinctive males were seen, along with a much higher number of females, all giving calls different from the Lapland's.

<sup>1</sup>RENAUD, W. E., and D. H. RENAUD. 1977. Birds of the Rosetown-Biggar District, Saskatchewan. Spec. Pub. 9., Sask. Nat. Hist. Soc., Regina.



Grasshopper

Hans Dommas



# SOME EARLY MAY BIRD OBSERVATIONS IN THE CYPRESS HILLS REGION

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The authors spent a long weekend (0730 May 6 to 1500 May 8, 1977) in the Cypress Hills region of southwestern Saskatchewan (as defined by Godfrey)<sup>2</sup>, resulting in some interesting observations. In 34 hours of actual observation time and 305 miles of travel (295 by car and approximately 10 on foot) we observed a total of 93 species, in the more restricted area of the Provincial Park units (West and Centre Blocks) the total was only 72 species. Most of the species not within the Provincial Park units were those found in prairie sloughs, which are almost nonexistent in the Hills proper. Several species were conspicuous by their absence; however, we did not cover the area in its entirety, concentrating our efforts in the Cypress Hills Provincial Park, particularly the two nature trails in Centre Block, and Coulee and Adams Lakes in West Block.

We observed four species which are not listed either by Godfrey<sup>2</sup> or Morrison<sup>3</sup>, although two of them were recorded by observers at the 1976 Saskatchewan Natural History Society (SNHS) field trip.<sup>4</sup> These were:

**BROAD-WINGED HAWK.** A single adult at Valley of the Beavers Nature Trail, Central Block, at 1235 and 1405 on May 6, and again at 1907 on May 8. This was probably one of a pair seen at the same location in 1976.<sup>4</sup>

**YELLOW-BELLIED SAPSUCKER.** A single male at Rainbow Campground, Centre Block, on May 7 and 8. A single bird was also seen in 1976, Loch Leven area.<sup>4</sup>

**GOLDEN-CROWNED KINGLET.** A brilliantly crowned male, at Rippling Waters Nature Trail, Centre Block, May 6.

**MYRTLE" WARBLER.** One male

seen in mixed deciduous woodland bordering pasturage south of Coulee and Adams Lakes, West Block, May 7. The "Myrtle" Warbler is presently regarded as the eastern equivalent of "Audubon's" Warbler, which replaces it in the Cypress Hills and is a common breeder there; the two are now combined as the Yellow-rumped Warbler.<sup>1</sup>

Some other observations which may be of interest are:

**RED-NECKED GREBE.** 10 at Coulee Lake and 4 at Adams Lake, West Block area, May 7. Apparently paired birds on territory, they were quite vocal but no courtship display was observed.

**DOUBLECRESTED CORMORANT.** 35 at Adams Lake (May 7), 4 at Coulee Lake (May 7), and 3 at Loch Leven, Centre Block (May 8).

**TRUMPETER SWAN.** One adult, standing on lakeshore and in flight, at Adams Lake, West Block, May 7 and a pair calling and flying low towards the southeast, Rainbow Campground in Centre Block, May 8. The bird at Adams Lake had the head and most of the neck stained rusty.

**OSPREY.** One bird seen soaring at medium height over Valley of the Beavers Nature Trail, Centre Block, May 6.

**RUFFED GROUSE.** One grey phase male, very tame, in deciduous woodland below Bald Butte, Centre Block, May 6. These birds were introduced into the Cypress Hills in the 1920's.

**FORSTER'S TERN.** 4 birds, apparently two pairs, at Adams Lake, West Block, May 7.

**SPRAGUE'S PIPIT.** Common; one or two heard singing at every stop on the





Yellow-rumped (Myrtle) Warbler

F. W. Lahrma

Yellow-bellied Sapsucker

F. W. Lahrma





Gap Road and the West Block plateau, May 7.

**RED CROSSBILL.** A pair and 3 recently fledged young at Rainbow Campground, Centre Block. Young were fully fledged, but awkward fliers; male was observed removing seeds from Lodgepole Pine cones and feeding young birds on the ground several times on May 8.

**LARK SPARROW.** 2 seen; one in the Centre Block, near the Lodgepole Pine plantation (seen chasing an "Oregon" Junco) May 7, and one seen on upper east slope West Block, May 7. This species not recorded on SNHS trip, June, 1976.<sup>4</sup>

Following is a list of the species seen and positively identified during our trip. As only two observers were involved, we have decided to indicate only numbers of each positively identified species, rather than attempt to indicate relative abundance. Our intention was not to conduct an intensive survey, and for this reason numbers are admittedly low for many species; hundreds of specifically unidentified waterfowl, shorebirds, gulls and the like are not included. As mentioned, the area covered is that used by Godfrey,<sup>2</sup> which is somewhat more extensive than the area most contemporary naturalists would call the Cypress Hills. Species recorded only outside the Centre and West Blocks and the Gap are designated (d), following Wedgewood.<sup>4</sup>

44 Red-necked Grebe, 1 Horned Grebe, 83 Eared Grebe (d), 4 Western Grebe (d), 2 Pied-billed Grebe (d), 1 White Pelican (d), 2 Double-crested Cormorant, 4 Great Blue Heron, 10 Whistling Swan (d), 3 Trumpeter Swan, 63 Canada Goose, 49 Mallard, 4 Gadwall, 47 Pintail, 8 Green-winged Teal, 70 Blue-winged Teal, 44 American Wigeon, 23 Northern Shoveler, 10 Canvasback, 23 Lesser Scaup, 4 Common Merganser, 1 Sharp-shinned Hawk (d), 6 Red-tailed Hawk, 1 Broad-winged Hawk, 17 Swainson's Hawk, 1 Ferruginous Hawk, 7 Marsh Hawk, 1 Osprey, 1 Prairie Falcon (d), 1 Ruffed Grouse, 5 Sharp-tailed Grouse, 31 American Coot, 17 Killdeer, 6 Common Snipe, 2 Upland Plover (d), 1 Spotted Sandpiper, 21 Willet, 3 Lesser Yellowlegs (d), 74 Long-billed Dowitcher

(d), 3 Semipalmated Sandpiper (d), 18 Marbled Godwit, 8 American Avocet (d), 115 Wilson's Phalarope, 7 California Gull, 6 Ring-billed Gull, 16 Franklin's Gulls, 4 Forster's Tern, 4 Common Tern (d), 7 Rock Dove (d), 10 Mourning Dove, 1 Belted Kingfisher, 3 "Red-shafted" (Common) Flicker, 1 Yellow-bellied Sapsucker, 1 Hairy Woodpecker, 1 Downy Woodpecker (d), 3 Say's Phoebe, 63 Horned Lark, 4 Tree Swallow, 14 Barn Swallow, 25 Black-billed Magpie, 43 Common Crow, 5 Black-capped Chickadee, 5 Red-breasted Nuthatch, 31 American Robin, 5 Mountain Bluebird, 1 Golden-crowned Kinglet, 7 Ruby-crowned Kinglet, 4 Water Pipit (d), 19 Sprague's Pipit, 2 Loggerhead Shrike (d), 5 Starling, 4 Orange-crowned Warbler, 1 "Myrtle" (Yellow-rumped) Warbler, 5 "Audubon's" (Yellow-rumped) Warbler, 17 House Sparrow (d), 54 Western Meadowlark, 10 Yellow-headed Blackbird (d), 71 Red-winged Blackbird, 67 Brewer's Blackbird, 6 Common Grackle (d), 5 Brown-headed Cowbird, 5 Red Crossbill, 1 Rufous-sided Towhee, 27 Savannah Sparrow, 13 Vesper Sparrow, 2 Lark Sparrow, 18 "Oregon" (Dark-eyed) Junco, 4 Clay-colored Sparrow, 2 White-crowned Sparrow, 2 Song Sparrow, 3 McCown's Longspur, 3 Chestnut-collared Longspur (d).

Eight additional species were added to the total trip list during the drive between Regina and the Cypress Hills area and back:

4 Redhead, 2 Ruddy Duck, 1 American Kestrel, 2 Semipalmated Plover, 2 Golden Plover, 6 Short-billed Dowitcher, 3 Pectoral Sandpiper, 16 Baird's Sandpiper. The Short-billed Dowitchers were sorted out of a flock of approximately 500 Long-billed Dowitchers, just west of Morse, May 6.

<sup>1</sup>AMERICAN ORNITHOLOGISTS' UNION. 1973. Thirty-second Supplement to the AOU Checklist of North American Birds. *Auk* 90:411-419.

<sup>2</sup>GODFREY, W. E. 1950. Birds of the Cypress Hills and Flotten Lake regions, Saskatchewan. *Bull.* 120, Nat. Parks Branch, Nat. Mus. of Canada.

<sup>3</sup>MORRISON, H. 1973. The Cypress Hills — A natural history. Popular Series 15, Saskatchewan Mus. Nat. Hist.

<sup>4</sup>WEDGEWOOD, J. A. 1976. Bird notes on the Cypress Hills Summer Meeting. *Blue Jay* 34:172-175.



# HOODED MERGANSER BROOD AT DELTA MARSH

RICHARD M. KAMINSKI, Delta Waterfowl Research Station, Delta, Manitoba R1N 3A1

The primary breeding range in Canada of the Hooded Merganser includes southern Ontario and Quebec.<sup>1</sup> Although the species' Canadian range extends intermittently from Nova Scotia northwestward to southeast Alaska,<sup>1,2</sup> few records of breeding originate from the Prairie Provinces. Breeding Hooded Mergansers are generally found in forested regions, commonly riverine habitats, because the species is a cavity nester.<sup>4</sup> This note documents the first known sighting of a Hooded Merganser brood on the Delta Marsh within the true prairie of south-central Manitoba.

On July 24, 1976 (1330), a female Hooded Merganser and her brood of three Class II ducklings were sighted by Patrick Godin (University of Guelph, Ontario) and myself in a man-made canal approximately 3 km east of the Delta Waterfowl Research Station headquarters. We observed the group swimming at a distance of about 10 m for approximately 20 sec. before we startled them, and they went into cover. They were not seen again.

No broods of Hooded Mergansers have been reported, among 2905 brood sightings made during surveys conducted on the Delta Marsh in July 1950, 1965-1966, and 1975-1976 (R. E. Jones *pers. comm.*). Although Thompson<sup>5</sup> documents observations of Hooded Mergansers as summer residents near Portage la Prairie, Manitoba, and Hochbaum<sup>3</sup> reports that the species occurs only as a

spring transient, this observation reveals that the species can nest within the sparsely forested Delta Marsh. The breeding of this species along with the recent occurrence of other cavity nesting anatids (i.e. Wood Duck and Common Goldeneye), may be related to the availability of nest boxes near the Delta station. Hooded Mergansers readily nest in artificial structures;<sup>1</sup> however, the nearest nest box to the observation site was over 3 km away. Inasmuch as the brood was sighted less than 1 km from a forested ridge, one cannot discount the possibility that the female nested in a tree cavity. The species has also been known to nest in badger holes, under rocks in ravines and a sandstone cavity.<sup>4</sup>

The author is grateful to B. D. J. Batt for editing the note.

<sup>1</sup>BELLROSE, F. C. 1976. Ducks, geese and swans of North America. Stackpole Books, Harrisburg. 544 pp.

<sup>2</sup>GODFREY, W. E. 1966. The birds of Canada. Queen's Printer, Ottawa. 428 pp.

<sup>3</sup>HOCHBAUM, H. A. 1944. The Canvas-back on a prairie marsh. Stackpole Books, Harrisburg. 207 pp.

<sup>4</sup>STEWART, R. E. 1975. Breeding birds of North Dakota. Tri-College Center for Environmental Studies, Fargo, N.D. 295 pp.

<sup>5</sup>THOMPSON, E. E. 1891. The birds of Manitoba. Proc. U.S. Natl. Museum. 13:457-643.



# SECOND SASKATCHEWAN SPECIMEN OF POMARINE JAEGER

MERVYN SYROTEUK, Park Naturalist, Prince Albert National Park, Waskesiu Lake, Saskatchewan S0J 2Y0

On December 30, 1976, the staff of Prince Albert National Park held a bird observation day. First, a Cooper's Hawk was sighted along the Cookson Road, truly a fortunate chance that the vehicle speed and position should coincide so perfectly with the Cooper's inclination to fly by.

Chance intervened once more — a large dark bird was sighted on the road allowance at the Spruce River—highway 263 Junction, 15 miles south of Waskesiu Lake. The bird was alive but obviously in trouble. It managed to fly a few yards before landing on the snow again where it was surrounded and captured.

It had the appearance of a very dark immature gull, except that its legs were a startling light blue and were thinner than those of a gull. Its bill

had a prominent hook. Dr. Stuart Houston met us in Prince Albert but his keys failed to identify the bird with certainty. Consultation with further books the next day indicated that it was too large for a Long-tailed Jaeger, too small for a Pomarine Jaeger and its legs were too blue for a Parasitic Jaeger.

Despite efforts to feed the thin jaeger, it died during the early morning of January 1. It was frozen and shipped to the Museum of Natural Sciences in Ottawa, where it was identified as an immature Pomarine Jaeger, by Henri Ouellet. The specimen was a female, weighing only 356.9 g, with a wing chord of only 326 mm, and a culmen of only 35.6 mm, measurements well below those given by Ridgway's keys.<sup>4</sup>



Mervyn Syroteuk with Pomarine Jaeger



This is the second specimen record for Saskatchewan for the Pomarine Jaeger; the first from Yellow Grass on November 9, 1922,<sup>2</sup>. There are also sight records from Kazan Lake by T. E. Randall and from Torch River by C. Stuart Francis.<sup>3</sup> <sup>1</sup>.

<sup>1</sup>FRANCIS, C. S. 1946. A list of the birds of Nipawin, Saskatchewan. Mimeographed July, 1943. Blue Jay 4:45.

<sup>2</sup>MITCHELL, H. H. 1924. Birds of Saskatchewan. Canadian Field-Nat. 38:101-118.

<sup>3</sup>RANDALL, T. E. 1962. Birds of the Kazan Lake region, Saskatchewan. Blue Jay 20:60-72.

<sup>4</sup>RIDGWAY, ROBERT. 1919. The birds of North and Middle America: A descriptive catalogue. Vol. 8 Gov't. Printing office Washington, D.C. 852 pp.

## WHITE RING-BILLED GULL AT SASKATOON

J. B. GOLLOP, 2202 York Avenue, Saskatoon, Saskatchewan S7J 1J1

On July 14, 1977, R. C. Godwin reported a white gull on the lawn west of the Prairie Migratory Bird Research Centre, University Campus, Saskatoon. The bird was later studied with binoculars and photographed at distances of 50 to 150 meters for about 35 minutes by John Hanbidge and the author.

Most of the time, the plumage appeared to be pure white, even through binoculars, but at the right angle in full sun the back and wings were a very pale blue. The bill and legs were the same yellowish colour as nearby normal Ring-bills but the ring on the bill was washed out — a

pale gray. The eye appeared dark. The wing tips and upper tail were white as observed when the bird was walking and flying. The bill, head and body appeared to be the same size as the smallest normal Ring-bill but were noticeably smaller than four other adults.

While the bird fed like other gulls it usually stayed away from the normally plumaged birds. It flew off by itself about 0530.

What was apparently the same bird was on the same lawn with up to 19 Ring-billed Gulls on August 4, 31 and September 1 (the date of writing).



Normal and white Ring-billed Gulls

J. B. Gollop



# LAZULI BUNTING AT HARRIS, SASKATCHEWAN

RON JENSEN, 1828 - 8th Avenue North, Saskatoon, Saskatchewan, and  
DON WEIDL, 337 Avenue D South, Saskatoon, Saskatchewan

An unidentifiable song led the authors to find a Lazuli Bunting after a cautious approach on June 25 at 0830 in Harris Sand Dunes, about 50 miles southwest of Saskatoon. The authors observed a male Lazuli Bunting singing from a dead tree and on a dead branch of a trembling aspen (*Populus tremuloides*). The bunting was extremely shy, retreating with our arrival but not before it was identified under sunny conditions.

Ron Jensen returned on July 1 to find the bunting chasing a male Mountain Bluebird approximately ¼ mile west of the original sighting. Before his presence was noted, he

was able to tape the Lazuli's song and photograph it from approximately 100 yards with a 400 mm telephoto lens.

Following an inventory under the International Biological Program in 1971<sup>4</sup>, Harris Sand Dunes were suggested as a natural area worthy of preservation.

The breeding range of the Lazuli Bunting in Saskatchewan, according to Godfrey, is southern Saskatchewan (Shaunavon, Moose Jaw and, rarely, Regina).<sup>7</sup> A search through the "Blue Jay" reveals numerous records of collected specimens and sightings. These are presented in the accompanying table.

## LAZULI BUNTING RECORDS FOR SASKATCHEWAN

Date	Locality	Birds	Observer	Reference
May 24, 1890	Indian Head	2 specimens	George Lang	5
May 26, 1892	Indian Head	1 specimen	George Lang	5
July 1 & 2, 1908	Eastend	1♂ seen	L. B. Potter	5
May 30, 1926	Percival	1 sighting	Elmer Callin	4
May 26, 1931	Round Lake	1 specimen♂	Fred Bard	5, 9, 4
May 30 & , 1934	Dollard	2 specimens	C. F. Holmes	5
May 31, 1934	Dollard	1 sighting	C. F. Holmes	5
July 11, 1934	Regina	1 sighting	F. G. Bard	5
November, 1935	Regina	1 sighting	Hugh Knowles	5
July 13, 1938	Arcola	1 sighting		5
40	Eastend	1 sighting	L. B. Potter	5
40	Shaunavon	1st nest & 2 pairs	L. B. Potter	10
42	Burham	1st nest	Arthur Ward	1
May 30, 1947	Regina	1 sighting	L. Ehman	5
June 26, 1951	Gull Lake	1♂ seen	H. & H. Partridge	8
57	Moose Jaw	2nd nest	Mrs. N. Dunn	5
June 15-16, 1957	Cypress Hills	1 sighting	SNHS	11
May 30, 1960	Regina	1♂, 1♀ seen	M. Belcher,	3
			G. Ledingham	
July 1 & 2, 1960	Fort San	1♂ seen	E. M. Callin	3
July 20, 1962	Near Avonlea	2♂ seen	M. Belcher,	6
			M. Rever	
June 1, 1963	Roche Percee	1♂ seen	D. Faheselt,	6
			S. Haggerty	
July 6, 1963	Claybank	1♂, 1♀? seen	G. Ledingham	6
July 9, 1964	Moose Jaw	1♂ seen	Mrs. R. Taylor	13, 14
June 7-Aug. 5, 1965	Moose Jaw	3rd nest	Mrs. R. Taylor	14
June 11, 1972	Estevan	1♂ seen	Mrs. G. Sernich	12
July 4, 1973	Dundurn	1♂ seen	J. A. Wedgwood	15
June 25, July 1, 1977	Harris	1♂ photo.	R. Jensen & D. Weidl	This Paper



The authors would be interested to hear of any additional sightings, errors or omissions.

<sup>1</sup>BELCHER, M., 1955. Bird notes from the files. Blue Jay 13(2): 28-29.

<sup>2</sup>BELCHER, M., and M. REVER, 1962. Getting to know our less common birds. Blue Jay 20: 146-150.

<sup>3</sup>CALLIN, E. M., 1960. Lazuli Bunting at Fort San. Blue Jay 18: 120.

<sup>4</sup>CRANNA, D. M., and J. S. ROWE, 1974. Natural areas in Saskatchewan.

<sup>5</sup>DUNN, N., 1957. Lazuli Bunting nesting at Moose Jaw. Blue Jay 15: 147.

<sup>6</sup>FAHSELT, F., 1963. 1963 records of the Lazuli and Yellow Chat. Blue Jay 21: 93.

<sup>7</sup>GODFREY, W. E., 1966. The birds of Canada. National Museums of Canada Bulletin 203 Biological Series No. 73.

<sup>8</sup>PARTRIDGE, H. and H. 1951. Bunting Blue Jay 9(3):4.

<sup>9</sup>POTTER, L. B., 1942. Saskatchewan records made since the publication of Mitchell's Catalogue of Saskatchewan Birds in 1924. Blue Jay 1: 25.

<sup>10</sup>POTTER, L. B. 1943. Bird notes from southwestern Saskatchewan. Canadian Field-Nat. 57: 69-72.

<sup>11</sup>ROY, FRANK. 1957. Operation Trunpeter. Blue Jay. 15: 138-140.

<sup>12</sup>SERNICH, MRS. GILLIAN. 1972. Lazuli Bunting. Blue Jay. 30: 258.

<sup>13</sup>TAYLOR, R., 1964. Lazuli Bunting Moose Jaw. Blue Jay 22: 109.

<sup>14</sup>1965. Second Lazuli Bunting nest record at Moose Jaw. Blue Jay 23: 166.

<sup>15</sup>SHADICK, S., 1975. Highlights of Saskatoon bird observations 1970-74. Blue Jay 33: 165-168.



Rose hips

Gary W. S.



# INDIGO BUNTING AT GOOD SPIRIT PROVINCIAL PARK, SASKATCHEWAN

RON JENSEN, 1828 - 8th Avenue North, Saskatoon, Saskatchewan, and  
DON WEIDL, 337 Avenue D South, Saskatoon, Saskatchewan

In 1977 the Saskatchewan Natural History Society held its annual summer field meet at Yorkton. As usual the event was successful and enjoyed by all. One of the highlights of the outing for us was the sighting of an Indigo Bunting at Good Spirit Provincial Park.

Wayne Harris and Sheila Lamont told us that on the morning of June 11, they had heard and seen a bird that resembled a bunting near the first overflow campground. They were unable to get a good look at it because of poor light, thus only a silhouette was observed. The four of us returned to the area late that afternoon to try and find the bird, but were unsuccessful. At approximately 0700 on June 12, the authors again returned to the area to find Bob Godwin with whom we spent about 10 minutes listening for the bird but, again, we were disappointed. The authors then left to look at an Eastern Wood Pewee that was recorded near the park entrance the previous day. At approximately 0745, we observed a male Indigo Bunting, perched on a dead branch at the top of a trembling aspen (*Populus tremuloides*). We studied the bunting for about five minutes during which it sang several times. Ron Jensen photographed the bird, using a 35mm camera and

telephoto lens. At 0805 we told Bob Godwin and Moray Lewis of the sighting, and they came with us to the area. The bird was again heard and seen several times. At 0815 the Indigo Bunting stopped singing and flew into the bush. Bob Godwin returned to the area later in the day and flushed a male and female from the shrubs along the roadside. In later correspondence with Wayne Harris, he states that because of the distance between the sighting he had on June 11 and the sighting we had on June 12, these are probably different birds.

Godfrey describes the immature male (first breeding plumage) as similar to adult male in breeding plumage but blues less pure; coverts with some brown.<sup>1</sup> The distinguishing feature of the male Indigo Bunting we saw on June 12, besides the blue color, was the brown wing coverts.

Other records for the Indigo Bunting in Saskatchewan are summarized in Table 1 as follows. Two hybrids between Indigo and Lazuli Bunting were collected in 1965 at Kenosee Lake.<sup>5</sup> The first, collected on June 4, had predominantly Lazuli Bunting features. The second, collected on June 18, had Indigo Bunting features predominating.

Table 1: INDIGO BUNTING RECORDS FOR SASKATCHEWAN

Date	Area	Birds	Observer	Reference
1890	Indian Head	2 seen	George Lang	5
May 28, 1893	Estevan	1 specimen♂	D. L. Thorpe	9
June 23, 1927	Armley	1 pair seen	M. G. Street	3
June 27, 1941	Good Spirit Lake	1 record	W. A. Tripp	2
June 22, 1953	White Bear	1♂seen	S. O. Jordheim	4
June 1, 1961	Saskatoon	1 banded	Florence Richards & C. S. Houston	—
June 1, 1967	Aylsham	1♂seen	Mrs. M. Robin	7
June 1, 1976	Qu'Appelle Valley	4 seen	F. W. Lahrman	8



- <sup>1</sup>GODFREY, W. E., 1966. The birds of Canada. Nat. Mus. Canada Bull. 203. Queen's Printer, Ottawa.
- <sup>2</sup>HOUSTON, C. S., 1949. The birds of the Yorkton district, Saskatchewan. Canadian Field-Nat. 63:215-241.
- <sup>3</sup>HOUSTON, C. S., and M. G. STREET, 1959. The birds of the Saskatchewan River. Sask. Nat. Hist. Soc., Spec. Publ. 2:205 pp.
- <sup>4</sup>JORDHEIM, S. O., 1953. Indigo Bunting. Blue Jay 11(3):10.
- <sup>5</sup>MITCHELL, H. H., 1927. Birds of Saskatchewan. Canadian Field-Nat. 38:101-118.
- <sup>6</sup>NERO, R. W., and M. R. LEIN, 1971. Birds of Moose Mountain, Saskatchewan. Sask. Nat. Hist. Soc., Spec. Publ. 7:56 pp.
- <sup>7</sup>ROBIN, M., 1967. Indigo Bunting at Aylsham. Blue Jay 25:146.
- <sup>8</sup>SERR, E. M., 1976. Northern Great Plains. American Birds 30:969-971.
- <sup>9</sup>SETON, E. T., 1908. Recent bird record for Manitoba. Auk 25:450-454.



Twining Honeysuckle

Bernard deVries

## EUROPEAN WIGEON IN SASKATCHEWAN

F. M. BRIGHAM, P.O. Box 3240, Station C, Ottawa K1Y 4J5

On April 27, 1977, J. D. Lafontaine and I saw a male European Wigeon at the east end of Cypress Lake, Saskatchewan. The bird was studied for 5 minutes with a 20x-40x Bushnell Zoomscope at a distance of about 100 m. The bird was seen in the air and then as it fed in short grass on a wet flat. The rusty head with buffy forehead and crown, blending with an all-gray breast, sides and flanks and the white upper wing coverts were

clearly visible in the sun. American Wigeons were nearby during part of the observation period. While no field guides were available, three nights before we had studied an excellent photo of a male taken by Lafontaine in B.C.

EDITOR'S NOTE: There are previous Saskatchewan records for Cumberland House (a pair on May 7, 1971) and Moose Jaw (one on May 23, 1977).



## AN HOUR AT JONES' PEAK

MARGARET BELCHER,  
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The wedding of Gary Seib and Barbara Shourounis took me to Eastend on a pleasant weekend in June, 1977. Because I had an English visitor as a companion, I was also looking forward to doing a little birding in that interesting country. To our delight, the bride and groom, in the midst of the wedding reception but with complete *sang froid*, advised about locations where we might see species like the Rock Wren. The next morning, June 19, we followed their directions and climbed north out of the valley to take the road to Jones' Peak, a splendid vantage point for the Frenchman River Valley. This high outte, now the site of a Sask Tel communications tower, is named after the well known pioneer naturalist and museum curator Corky Jones.

In the hour that we spent there, in mid-morning, we had a generous sample of the bird life of the Frenchman River Valley's eroded slopes. We watched a pair of Mountain Bluebirds, for example, making many trips with food to what was apparently a nest site behind the sandstone outcroppings of the steep outbank. A spot they favoured in their hunt for insects was a slight pebbly depression on the hill top, where the male bluebird, a Rock Wren and Chipping Sparrow were all observed taking food.

From time to time, we spotted a Rock Wren singing from its perch or moving about busily in search of food, while below in the coulees we could hear the distant voice of a Say's Phoebe. A Prairie Falcon also passed over the coulees below us several times with its characteristic call, suggesting that it might be nesting on one of the cliff faces.

At the reservoir near Eastend we had watched swallows closely, without seeing Rough-wings, but from the hilltop at Jones' Peak we had an excellent view of a pair flying just



Mountain Bluebird

John Lane

below us. More exciting was a pair of Violet-green Swallows that we were able to watch closely as they flew in and out behind a sandstone outcropping, obviously feeding young. Although this species was not definitely established as breeding in Saskatchewan until a nest was found at the SNHS Prairie Dog Sanctuary near Val Marie during the SNHS summer meeting in June, 1969, sightings had been reported previously along the Frenchman River where the terrain obviously provides a likely habitat for them.

Turning our faces away from the Valley occasionally to look north over farms in the hills, we saw hawks (par-



ticularly the Ferruginous) and a Golden Eagle. For the birder from England, this short hour of observation from Jones' Peak revealed the characteristic bird life of that dramatic eroded valley terrain.

## SAW WHET OWL ATTACKS ROBIN

SANDRA JOHNS  
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On April 20, 1977 I was conducting a lonely vigil at a Saw whet Owl nest on the Wagner property, a spruce-tamarack bog on 118 Avenue on the outskirts of Edmonton, Alberta. A male Ruffed grouse was drumming close by, a coyote walked in the forest within 20 feet of me, and two robins

were singing in the area.

At 2023, while still fairly light, the Saw whet male arrived, calling softly, and sat in a tree 15 feet behind me, directly facing the nest (about 30 feet away). The male transferred prey from foot to beak, flew to the nest, calling softly, and deposited food in the nest hole.

The bird returned to his original perch and called territorially for a few seconds. One of the robins landed in a tree a few feet from the nest, then flew to a tree, 60 feet east of the nest.

Suddenly, the male owl took off from his perch, flew at the singing robin and struck it with his talons. The robin, screeching loudly, flew over me and away from the area. The owl disappeared into the bushes. No robin sang for the rest of the evening. It was a most dramatic incident.



Saw whet Owl

F. W. Lahrmann





Eared Grebe

Wayne Lynch

## COOTS DISTURB EARED GREBE NESTS

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Regina, Saskatchewan S6S 6W2

On July 9, 1977, I watched an unusual example of nest disruption among Eared Grebes. An American Coot hopped onto a vacant grebe nest knocking an egg into the water. The coot preened for 20 minutes and swam off. From my blind I saw other coots sitting on nests but witnessed no further disturbance of eggs.

Probably other natural hazards such as wind are of more consequence to nest success than resting coots but certainly where they occur in large numbers, their presence may be a locally significant factor.

## MARKED CRANES

Whooping Cranes in Wood Buffalo National Park and Sandhill Cranes in the Interlake Region of Manitoba were marked with coloured plastic bands this summer. The purpose was to help visual recognition of individual birds in studies of productivity and survival of Whooping Cranes and winter destination of the Sandhill Cranes.

The Sandhill Cranes were marked with orange plastic collars around the neck and above the tibio-tarsus joint. Black letters M and numerals from 01 to 15 are on the bands of Sandhill Cranes marked in Manitoba.

The juvenile Whooping Cranes are marked with plastic leg bands only. Combinations of colours are used to





Whooping Cranes

F. W. Lahrm

identify individual Whooping Cranes born this year; there are no numbers of letters on these bands. In 1977 a red plastic leg band was always used with a combination of green, blue, white and other red bands.

Persons seeing such marked birds should notify the Canadian Wildlife Service, 115 Perimeter Road, University of Saskatchewan, Saskatoon S0X4, or telephone collect to 306-64087.



Sandhill Cranes

Lorne S



# LITTLE BROWN BATS WITH ABNORMAL DENTITION\*

HUGH C. SMITH, Provincial Museum of Alberta, 12845-102 Avenue,  
Edmonton, Alberta T5N 0M6

The most common bat in Alberta is the Little Brown Bat (*Myotis lucifugus*). Although it is widely distributed and occurs in fairly large colonies, very little is known about the biology of this bat in the province. Recently, while studying cranial variation in this species, I came across individuals that exhibited a series of dental anomalies. There are teeth missing in some, a phenomenon that has been reported from other areas in North America,<sup>1 2 4 5</sup> and, in others extra teeth, or teeth that are so crowded as to appear fused, (Table 1). Dental abnormalities have not previously been reported for this bat species in Canada.

During the course of this investigation 235 skulls were examined. All specimens are in the natural history collections of the Provincial Museum of Alberta. The majority of these specimens were collected by members of the Alberta Fish and Wildlife Branch and donated to the museum through the courtesy of Mr. David Schowalter.

The dental formula for permanent teeth in *Myotis lucifugus* is  $1\frac{2}{3}$ , C  $1\frac{1}{1}$ ,  $\frac{3}{3}$ , M  $\frac{3}{3}$  for a full complement of teeth. In the upper jaw, the incisors are small, the canine and molars are large, and the premolars are variable size. The fourth premolar is large, but much smaller than the molars. Premolars two and three are small and in some specimens are extremely crowded. It has been suggested that with these teeth may be non-functional<sup>4</sup>. There is less crowding and variation in the teeth of the lower jaw.

Fenton<sup>3</sup> has described the replacement of the deciduous dentition by the permanent teeth in *Myotis lucifugus*. The sequence of eruption

of the permanent upper premolars is P<sup>4</sup>, P<sup>2</sup>, P<sup>3</sup>. P<sup>3</sup> is the last permanent tooth to erupt. In bats, the first premolar is always missing<sup>6</sup>, so that the premolars that remain are numbered P<sup>2</sup>, P<sup>3</sup>, P<sup>4</sup>. Frum<sup>5</sup> reported that in *Myotis lucifugus* in eastern North America, P<sup>3</sup> is sometimes missing. Fenton<sup>3</sup> found that tooth eruption is correlated to total length of the animal. For example, P<sup>3</sup> is always present by the time these bats have reached adult size: 80 - 100 mm in length. The length of the bats examined for this paper ranged from 82 - 93 mm. These bats are considered to be adults by the lack of cartilage in the finger joints<sup>1</sup>.

In a sample of bats studied by Findlay and Jones<sup>4</sup> and Barbour and Davis<sup>2</sup>, it was found that in some individuals premolars were missing in the lower jaw. In the sample of bats examined during this study two specimens have missing premolars in the lower jaw. In one specimen (Z76.60.11), P<sub>2</sub> and P<sub>3</sub> are missing from both sides of the jaw. The other specimen (Z76.116.5) has P<sub>3</sub> missing from the right side. However, as the alveolus is present this loss is probably accidental.

In examining the literature I have been unable to find any reference to supernumary teeth in *Myotis lucifugus*. One specimen (Z76.60.5) from a sample of 21 taken at Champion, Alberta, has an extra upper left premolar. The upper right side has the normal number of premolars. There is severe crowding of teeth on the left side, but little, if any, crowding on the right side. In another specimen (Z74.106.6) from Cadomin, the left upper P<sup>3</sup> has two cusps of about equal size. It is not possible to determine whether this extra cusp is a supernumary tooth that has been severely crowded and fused to its neighbour or whether the P<sup>3</sup> is an ab-

Natural History Contribution Number 33,  
Provincial Museum of Alberta.



Table 1: DENTAL ANOMALIES IN MYOTIS LUCIFUGUS

Museum No.	Tooth Anomaly	Sex	Age	Location
Z69.59.1	upper p <sup>3</sup> missing on both sides	Female	Adult	Edmonton
Z74.106.6	lower right p <sup>3</sup> has 2 cusps, appears as if two teeth fused, anterior cusp larger than posterior cusp, upper left p <sup>3</sup> has 2 cusps of equal size, P <sup>2</sup> present-normal size	Female	Adult	Cadomin
Z75.59.3	left upper p <sup>3</sup> missing	Female	Adult	Hinton
Z75.93.7	left upper p <sup>3</sup> missing, right upper p <sup>3</sup> extremely small	Female	Adult	Hinton
Z75.105.1	upper p <sup>3</sup> missing on both sides	Female	Adult	Warner
Z75.105.7	upper p <sup>3</sup> missing on both sides	Female	Adult	Warner
Z76.59.2	upper premolars small and crowded together, appear as one tooth, anterior cusp larger than posterior cusp	Female	Adult	Skiff
Z76.60.5	upper premolars, 3 left side, 2 right side	Female	Adult	Champion
Z76.60.11	lower premolars p <sup>2</sup> and p <sup>3</sup>	Female	Adult	Champion
Z76.60.18	upper premolars p <sup>3</sup> missing from both sides	Female	Adult	Champion
Z76.116.1	right upper p <sup>3</sup> missing, left upper p <sup>3</sup> very small	Female	Adult	Hinton
Z76.116.5	right lower p <sup>3</sup> missing, alevolus present	Male	Immature	Hinton

normal tooth with two cusps. In the lower right jaw of this specimen P<sup>3</sup> has two cusps with the anterior cusp slightly larger than the posterior cusp.

During the course of this study a note was made on the size of the small premolars. They were recorded as being normal size, or smaller than normal size. A note was also made on the spacing of P<sup>2</sup>, P<sup>3</sup>, P<sup>4</sup>, and the canine. If there is no space between the teeth this was considered as crowding. In some cases the crowding is severe enough to cause the premolars to be out of alignment. Of the 235 skulls examined, 129 (54.9%) show some degree of crowding in the upper jaw. The teeth in the lower jaw show little crowding, and only one specimen (Z76.60.18) is considered to have manbicular teeth that are crowded. In 80 (34.0%) of the specimens examined, the upper premolars are considered to be smaller than average. The manbicular premolars are more consistent in size, and only one specimen (Z74.106.10) is considered to have premolars that are

noticeably smaller.

In bats from Alberta, it is not clear the anomalies of the premolars is genetic trait as a result of evolutionary process. The bats come from widely separated geographical areas in the province. The sample from Warner is the only one that has more than one bat with premolars missing in the upper jaw. The sample from Champion has three bats with dental abnormalities. In one case (Z76.60.5) there is a supernumerary premolar, in another (Z76.60.18) there are missing upper premolars, and the third (Z76.60.11) the premolars are missing from the lower jaw. There seems to be some pressure exerted on the small premolars, as evidenced by the number of animals that have these teeth missing and by the number that show a trend to reduce the size of the premolars.

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<sup>5</sup>FRUM, W. G. 1946. Abnormality in  
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<sup>6</sup>VAUGHAN, T. A. 1970. The skeletal  
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Striped Skunk

Lorne Scott



# AMERICAN BLACK BEAR



Hans  
Dommasch





Larry Morgotch

Gary W. Seib





## REQUESTS FOR ASSISTANCE

The Blue Jay has recently been declared the avian emblem of Prince Edward Island. We are anxious to obtain high quality photos of the bird for use in publications, interpretive slide talks and related projects. Do you have any suitable photos that we can purchase? If so, please contact *Diane Griffin*, Supervisor of Interpretation, Dept. of Tourism, Parks and Conservation, P.O. Box 2000, Charlottetown, Prince Edward Island C1A 7N8.

A comprehensive bibliography of martins is currently in preparation. It will include all papers dealing solely or partly with martins (*Progne spp.*) except local annotated checklists. Authors wishing to have material included should send an abstract or reprint to *Charles R. Brown*, Box 1309, Austin College, Sherman, Texas 75090, USA.

I am working with volunteers from the Manitoba Naturalists Society on an index to the Chickadee Notes column of A. G. Lawrence, numbers 1-1756. We would like to include the location of all known complete or nearly complete sets of the columns to facilitate access to this valuable source of information on the birds of Manitoba and adjacent regions. Anyone having all or most of these columns or knowing of someone who may, please write *Jack Dubois*, Assistant Curator, Manitoba Museum of Man and Nature, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2.

The National Museum of Natural Sciences in Ottawa is developing a permanent exhibit gallery entitled ANIMAL GEOGRAPHY, and is looking for high quality colour photographs of specific subjects. If you have photos you think might be suitable on the following subjects —  
a) 35mm (or larger) colour transparencies or negatives of Greater Prairie Chicken or Sage Grouse (typical habitat, non-courtship poses), or of desert

habitat (sandy desert or dunes bounded by a line of vegetation);  
b) large format (2¼ or larger) transparencies capable of being enlarged to 4' x 4' of man altered environment (a smoggy cityscape, industrial area, garbage dump, etc.), cowboy and cattle (an action shot of cowboy rounding up cattle or a pastoral scene of a shepherd and dog watching over sheep), predator and prey (a predator such as a lynx, coyote, bear catching or eating a prey such as a rabbit, salmon, etc.);

please send a copy to the address below. We will negotiate payment and credit for use of photos selected. Those photos that do not meet our specifications will be returned by registered mail. *Barry Peers*, Exhibit Planner, Interpretation & Extension Division, National Museum of Natural Sciences, Ottawa, Ontario K1A 0M8.

## SNHS ANNUAL MEETING

The 29th annual meeting of the Saskatchewan Natural History Society will be held in the Biology Theatre on the Campus of the University of Saskatchewan, Saskatoon, on October 14-15, 1977.

Registration will begin at 1830 on Friday. Members are invited to present up to five minutes of slides. Saturday's banquet will be in Marquis Hall, near the Biology Building.

Please send resolutions to Dr. Maureen DuWors, Biology Department, University of Saskatchewan, Saskatoon, in advance of the meeting.

## YOUNG NATURALIST SECTION FOR NEWSLETTER

Editor Pat Kern invites contributions from young naturalists for a special page in the SNHS Newsletter. She would welcome nature observations, poems or sketches and drawings suitable for black and white reproduction. Send them to 105 Chestnut Avenue, Moose Jaw, Saskatchewan S6H 1A7.



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White Pelicans

Edith W. Kern

## PLENTY OF PELICANS

On July 1, 1977, four members of the Moose Jaw Natural History Society (Molly Ritchie, Jean Thomson, Ruth Hilling, Edith Kern) drove to the west side of Pelican Lake (north from Mortlach) to the end of the old dam, and were astounded to see a "guestimated" 1500 + White Pelicans! In the old days the Lake got its name from that noble bird. For many years, however, no White Pelicans were seen there. Then, about 6 or 7 years ago, the birds started to return, a few at a time, until the normal sightings were from 25 to 100 in a season. We talked to Del Duffy, who has farmed in that area for years, and he said he cannot recall ever seeing so many Pelicans at one time.

On July 15, Mickey Lane and I went back to check. We went in to the lake north of Besant Regional Park, as we didn't have time to go as far as last time, but you can see up to the dam from there, and we saw about 200-300 birds. Maybe we were lucky to see a peak movement . . . . who knows?  
Edith W. Kern, 1086 Alder Ave.,  
Moose Jaw, Saskatchewan S6H 0Y4.

## BIRDWATCHER'S PARTY

To-day I had a birdwatcher's party, very unexpected! Wish I'd had some

other birdwatcher to share it with me. About noon my husband finished irrigating his hay in the flat, south of Val Marie. He came home and asked if I wanted to go and see some "orangy" birds that had flown in. I took my bird book and field glasses and away we went. The last strips to be irrigated are next to the highway so we stayed right on the road and looked at around 150 birds; most gulls. The "orangy" birds turned out to be Yellow-headed Blackbirds.

There were about a dozen Yellow-headed Blackbirds — male and female — so it made me wonder: were they not nesting yet? Or were they unmatched pairs and their mate on the nest?

One surprise I got were the gulls. All this time I had thought our common gull that follows the tract summerfallowing and shows up at irrigation time was the Herring Gull but these I looked at were all Ring-billed Gulls. There must have been nearly 100 of them.

The next most abundant was the Franklin's Gull with its black head. There were quite a few of them swooping down for food. The water drives all the bugs and mice out of the ground and these birds were having a hey-day! There must have been a dozen Black Terns also diving down for food.



One beautiful Avocet strutted by himself, knowing he was the prettiest of them all. Two couples of Marbled Godwits were feeding in the shallow water. These can't be nesting yet. If I had seen any of them before I had certainly never identified them. So it was a first for me.

That morning before we left I had seen a Yellow Warbler in the tree by my window. I was glad to see them back. In 1976 I saw not a one. Other years this warbler had been very common.

As we drove up from our birdwatching spree, a Western Kingbird sitting on our fence flew up. They are common in our town but he just wanted to finish the day — May 1, 1977! Lise Perrault, Val Marie, Saskatchewan.

## LONGSPUR MEMORIES

One of the many interesting aspects of birdwatching is that one never knows when the unexpected will happen.

It is easy to understand Atlantic storms blowing European birds to North America, and vice versa, but what is one to make of an adult Chestnut-collared Longspur in full breeding plumage doing on a Victoria Wharf course on the sea front on the 1st day of May this year?

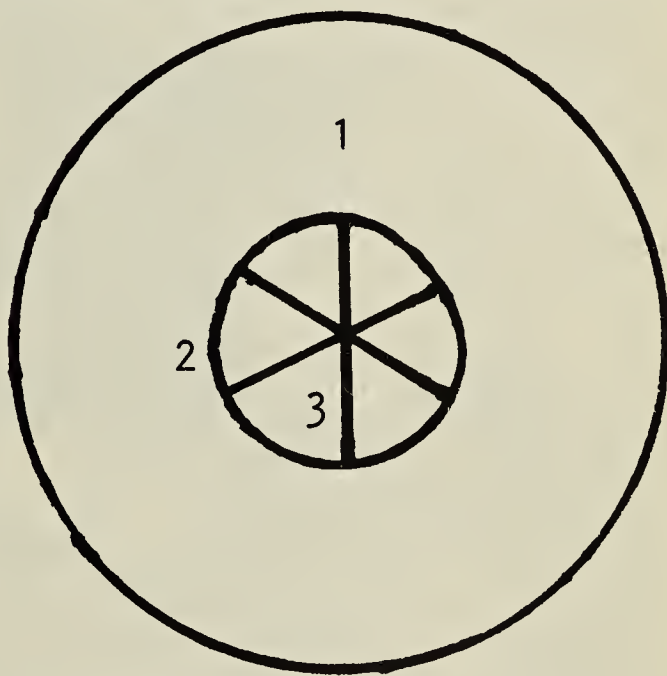
This brought back memories of our first birding trip to the Prairies in an early June. My wife and I were approaching the Saskatchewan border in our car when we heard an unusual song. So we stopped and walked over the virgin prairie, rather hilly as I remember, and found ourselves surrounded by Chestnut-collared and Cowbird's Longspurs, Horned Larks, King Buntings and meadowlarks rising and falling on fluttering wings and singing all the while. The longspurs and buntings were new to us, and we always remember how excited we were to see and hear all these birds in their breeding grounds. Albert R. Davidson, 2144 Brighton Avenue, Victoria, B.C.

## SQUIRREL-PROOFING BIRD BOXES

I read with a great deal of interest G. A. Wilde's article in the Blue Jay's June issue "Squirrel Damage to Nest Boxes". We have a summer cottage at Whytefold, on Lake Winnipeg, and during the past three years we have been plagued by red squirrels chewing bird boxes and also damaging nests in trees.

This summer we decided to try an experiment. I am enclosing a diagram of the tin covering which my husband made in order to protect the hole in the bird box. We did this with our two wren houses and found that it worked very well.

Mention was made that it might be the glue in the plywood which attracts the squirrels. This might be the reason but I am doubtful of this. We had the wood of one of our screen windows (in storage all winter in an outhouse) chewed, and the wood was spruce (with no glue). Mrs. Jean Bancroft, 264 Campbell St., Winnipeg, Manitoba R3N 1B5.



1. End of juice can — 48 oz.
2. Circle slightly in excess of entrance to bird box.
3. Tin cut into sectors from centre to circumference of circle
4. Sectors pressed back into entrance to bird box, making sure they are flush with the wood or bent back against inside of front wood panel.
5. Bird box has, therefore, an entrance faced with tin.
6. Paint same colour as box.



## RABBITS AND TICKS

When I came West with our family in 1904, there were a great many English and Scotch settlers coming in at the same time. The English settlers in particular were very pleased at being able to procure rabbit so readily, just with a bit of snare wire. Then a few years later, they had to give up eating them because the jack rabbits were so thin and covered with abscesses or blisters. Now that I know more about wood ticks, I wonder if they are not a factor in this cycle of comparative abundance and scarcity of jack rabbits. Has anyone studied

the fluctuations of wood ticks in relation to the rabbit cycles? — *Robertson*, Indian Health Commission, Saskatchewan.

EDITOR'S NOTE: Dr. John R. Allen, professor of veterinary parasitology at the University of Saskatchewan made the following comment on the ticks: "Most of the ticks on rabbits in Saskatchewan are *Haemaphysalis leporis-palustris*. Larvae and nymphs of woodticks *Dermacentor andersoni* (Western Saskatchewan), *variabilis* (Eastern Saskatchewan) do not attach to rabbits, but would be rather small and are rarely noticed by most people. The abscesses/blisters could possibly represent allergic reactions to the feeding ticks, but I wouldn't bet on it."



Snowshoe hare. Note ticks on ears and cheek

Gary W. b





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